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THE

# Dental Office and Laboratory.

FOURTH SERIES.

Ser. 3

VOL. IX. PHILADELPHIA, JANUARY, 1895. No. 1.

## THE CONSTRUCTION OF CROWN AND BRIDGE WORK,

BY THEODORE F. CHUPEIN, D. D S., Philadelphia, Pa.

The comforts connected with this style of work, for the replacement of lost teeth, are many, yet that bridge work has disappointed both patient and operator in many cases will be admitted by perhaps all who have attempted it. The old truism which never fails says, "that it is always the *abuse* rather than the use of a good thing which brings it into disrepute," and so it is with bridge work as with every other good thing. All engineers know that unless the pier or buttress is strong the bridge will be weak or will fall; and thus they give strict attention to this important point; and so should it be with dental engineers in selecting strong piers for the support of their bridge work. It is useless to expect a bridge having *four piers*, such as is illustrated by Figs. 1, 2, to support a bridge of *ten teeth.* It is imposing too much work or strain on the piers, and the plan of anchoring a spur into the cavity of a molar, as shown by the cut, Fig. 1 A, besides being difficult to insert properly, is unreliable.

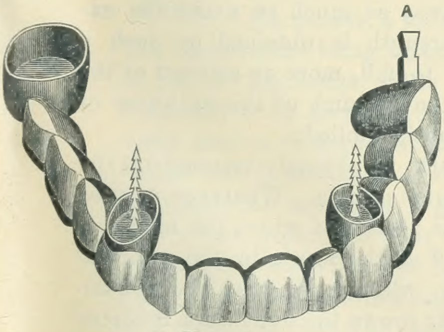

FIG. 1.

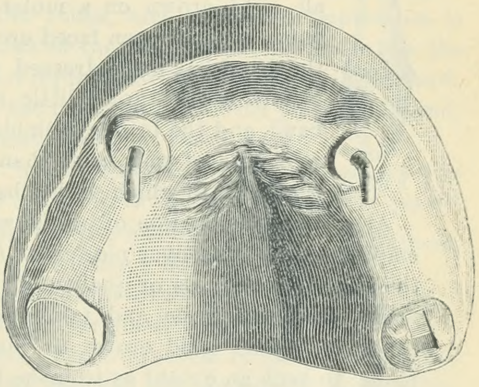

FIG. 2.

A bridge of *one tooth* with *one pier* can sometimes be made satisfactory. A bridge of *one tooth* with *two piers* is always satisfactory, provided the piers are strong. A bridge of *two*, *three* and at the very most *four teeth* supported by two strong piers may be made satisfactory, but a larger bridge than this, with but two strong piers, we take no stock in, and do not believe they should be constructed. Several small bridges are better than one large continuous bridge, being more easily constructed and inserted, as well as being more amenable to repairs should a fracture occur.

Caps covering the roots of strong molars or bicuspids are always more reliable than any other form of support; and open faced crowns over the two upper or lower cuspid teeth, for the support of the four incisors are better than artificial crowns with dowels entering the roots of these teeth.

In the back of the mouth, where gold is not objectionable, we would recommend the employment of *all gold dummies* instead of *tipping porcelain veneers*, as is usually done, for despite this precaution against the fracture of the porcelain teeth, they *will* get fractured frequently, necessitating the removal of the bridge for repair, or if left thus fractured, as we have sometimes seen, interfering with the beauty of the work and the comfort of the patient.

The employment of a band around a cuspid tooth, dressed away considerably on its labial face, Fig. 3, for the purpose of not exposing too much gold to view, but rising on its palatal surface so as to rest on this part of the tooth, in connection with an all gold crown on a molar or bicuspid, is not as reliable a support as an open faced crown on the cuspid tooth; for, as the band has to be dressed away so much to avoid the exposure of the gold, little strength is obtained by such a band, and the bridge is liable to fail, more on account of the weakness of the band than on account of the weakness of the tooth to which such a band is applied.

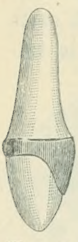
FIG. 3.

As to the construction of bridge work, we strongly recommend the employment of *dies* over *plaster of Paris models.* Whatever may be the superior hardness or quality of the plaster of which the model is made, the putting on and taking off of the ferule in the effort to properly fit the gold crown or pier, will surely wear the plaster model to such an extent as to make the crown too tight when it comes to be placed over the crown or root in the mouth. This is not the case when dies are used to work by, as they are of sufficient hardness and are not affected by wear. We use dies as well for fitting crowns on bands as for purposes of articulation. If a plaster of Paris model be used for this purpose, each time the articulating model is brought against the teeth or dummies which are being mounted on the bridge, a small portion of the plaster is worn off, and though this may be very slight, the frequent wearing is sufficient, in the aggregate to interfere with the proper occlusion when the bridge is placed in the mouth, requiring the dentist, when the work is completed, either to grind away the gold of the bridge work, or so much of the natural teeth to permit an easy occlusion; the latter being disagreeable to the patients, the former mutilating and spoiling the beauty of his work. By the employment of dies, both for working and articulating models, these things are avoided.

Plaster of Paris impressions then, are taken of the teeth, both for the working and articulating dies, after the roots and teeth are shaped for the reception of the crowns, bands, caps or ferules which are to be fitted over them. It will be often found that when a plaster impression is taken, the thin septum of plaster which runs *between the teeth* will be broken away when the impression is withdrawn from the mouth. This *can* be remedied by passing a separating file between such teeth of the dies to restore the die to the same condition as the teeth or roots are in the mouth, but this procedure is attended with a certain amount of *guess work*. We prefer to do no guessing, but to have a perfect photograph of the teeth. To overcome the breaking away of this small septum of plaster which runs between the teeth, we whittle a small piece of orange wood twig, in shape and size of Fig. 4. This being double wedged in shape (as the cut shows), is passed between the roots, and when the impression is withdrawn it remains *in* the impression, so that when the die is cast, a perfect representation of the parts is obtained. The impressions being taken, the ends are luted with plaster of Paris, to prevent the escape of the fusible alloy at these points.

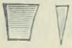

FIG 4.

Should it be necessary to use a dowel or pin in the root of any tooth such as is employed for crown work, such a pin may be placed in the root in the mouth, using the precaution to taper it slightly, as shown by Fig. 5, bending a hook on the end which protrudes from the root, in order that the hook may engage into the impression plaster and come away with it. In order that the *exact* direction of the prepared root canal may be obtained, and to prevent any resistance when withdrawing the impression, or any wabbling or movement of the pin in the root, when the plaster, in the impression tray, is introduced over it, if the pin be slightly warmed and coated with a film of wax, and then pushed into the prepared root canal, all misgivings or accidents of this kind will be avoided.

FIG. 5.

On breaking away the plaster impression to release the die, when the metal has cooled, the pin Fig. 5 as well as the septum wedge Fig. 4 will generally be found adhering to the impression, and come away with it; if it should not, by seizing the dowel or pin at the hooked end with a pair of flat nose pliers and giving it a gentle twist, it can be removed from the die almost as easily as from a plaster model.

After the impression is taken and the ends luted all ready to pour the fusible alloy, provision should be made to secure the dies to the articulator. This may be effected as follows: A piece of iron wire is bent in the form of a staple, like Fig. 6, and after the alloy is poured into the impression, just before the metal begins to chill, the ends A A of staple are sunk into the metal by holding the staple with a pair of tweezers, keeping the staple in position until the metal cools. Or the die may be made, and when ready to place it in the articulator, the base of the die may be slightly warmed and a drop or two of adhesive wax melted on it. When this cools, the staple held by the tweezers may be warmed, and the ends A A placed into the adhesive wax which was dropped on the die. With this addition to the die it may be securely attached with plaster to the articulator.

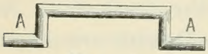

FIG. 6.

A word about alloys. It is necessary in using an alloy to employ one which will melt at a temperature of about 150° Far. If the melting point be much above this, the pouring of the metal into the plaster impression will generate steam, and this will cause a spluttering or bubbling which will result in a faulty die, and defeat all the work. The impression—which perhaps gave you considerable trouble to obtain accurately—will be spoiled and all the work will have to be done over again. This is not only annoying to you but to your patient also. It is therefore necessary to have an alloy which will melt at a low temperature, as also one that will be hard, on which swaging may be done. The alloy which we have placed in the hands of Messrs. Johnson & Lund will melt at this temperature; it is hard enough to swage upon, and may be poured into an impression *fresh from the mouth* without the least fear of bubbling or spluttering. Indeed we have taken a small pot and placed an ingot of our metal into it, and placed this small pot into a pan of water, and after the water in the outer pan was brought to the boiling point, the ingot in the smaller pot was found to have melted. There are many fusible alloys on the market which may be bought at a less price, but none will be found to possess the requisites of this. Expensive metals are used in the formula of our alloy, and for this reason it cannot be manufactured for less than they charge for it, to yield them a legitimate profit. We would, therefore, caution all such as use fusible alloy for crown and bridge work to see that it melts at the temperature we have specified, or whether it melts in boiling water, so as to enable them to pour it into a plaster impression. It is true that the model may be made of plaster of Paris, and an impression of this model taken with mouldine, and the alloy poured into the mouldine impression. But the fine lines of the plaster model, as well as the exact relation which one tooth bears to the other, only obtainable in a plaster of Paris impression, make it necessary to use plaster for the impression material, if success is desired, and which never can be reproduced by any plastic material. Thus the cost of the fusible alloy cannot compensate for the lack of exactness by this latter suggestion.

Another advantage of dies over plaster models for crown and bridge work, is the expedition which is possible with the former. All who have made plaster models from plaster impressions know the trouble, time and care it is necessary to observe in removing the model from the impression, and how often, despite the greatest care, the knife will slip, which results in the mutilation or the defacing of the model, perhaps at a most important point, thereby rendering the model almost worthless.

In the employment of dies, no danger of this kind is to be apprehended, for as soon as the metal is cold, which occurs much quicker than the setting of the plaster, the impression can be broken away, with no fear of disfigurement, and the work may be proceeded with, without half the delay there is with plaster models.

When two back teeth antagonize, and it is necessary to place a cap or crown over each to serve as piers for the support of an upper and lower bridge, with other similar piers, it will be necessary to grind away sufficient from the two occluding surfaces of such teeth so as to prevent the cap, which is swayed over such surfaces, from touching so hard as prevent the teeth being brought together into their natural occlusion. When the ferule is fitted around the tooth on the die, a piece of gold plate 30 gauge is placed on this occluding surface, and by putting a lead bullet on this the blow of a hammer on the bullet brings the piece of plate in close contact with the ferule, when it can be united to form the cap crown with a minute quantity of solder. This of course should be done *before* the dies are placed in the articulator.

To take the bite only a *small piece of wax* should be used. We do not think modelling compound should ever be used to take the bite. Indeed, we frequently find no use for the bite wax at all in bridge work, as, having the dies of the teeth of each jaw, by noticing the wearing of the teeth at this or that point and the interlocking of the cusps of the teeth at other points, the dies may be put together in such exact apposition as to make a wax bite entirely unnecessary, and thus to secure an occlusion which is as perfect as it is possible to obtain. Still, sometimes, and in some cases, where such guides to the natural occlusion as we have referred to, are wanting, a bite with wax will be necessary. When the dies are ready to be put into the articulator, they are placed in apposition, and held thus by dropping adhesive wax on them at several points, so as to keep them in exact relation and hold them together. But if a wax bit has been taken, of course, this will not be necessary. Thus secured they are united in the articulator with plaster of Paris, by means of the staples which have been attached to them, already alluded to.

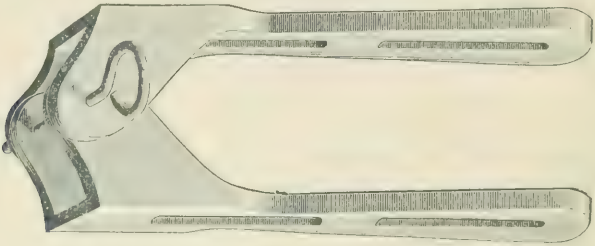

Fig. 7.

It will be found that in putting the dies into the articulators, such as are offered for sale by the depots, (see Fig. 7.) that these are generally constructed so low as not to admit even two very small dies between the arms of the articulator, compelling the workman to add a *bungling quantity of plaster of Paris* to one or other of the dies, as shown by Fig. 8. This, while it does not interfere with the

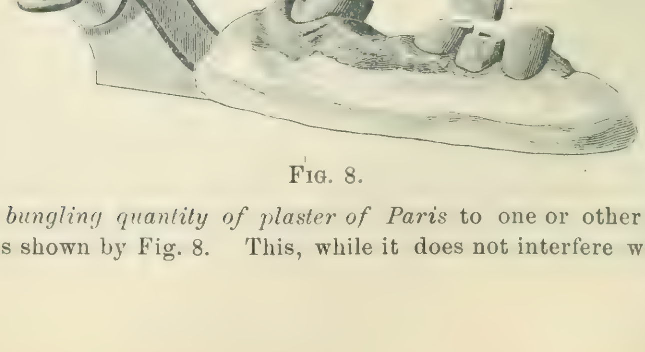

Fig. 8.

correctness of the articulation, is offensive to a neat or particular workman. We called the attention of Messrs. Johnson & Lund to this defect in their articulator, and they propose soon to put one, such as is illustrated by Fig. 9, on the market. An articulator with the arms separated as much as this one, will admit of easy and neat adjustment of dies or models between the arms.

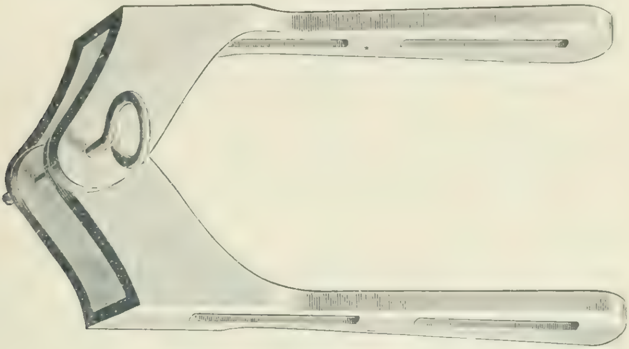

FIG. 9.

## NOTICE.

IN consequence of a quantity of reading matter relative to Anæsthesia, prepared for this issue, many book notices and other articles must be excluded.—ED.

## FIFTIETH ANNIVERSARY OF THE DISCOVERY OF ANÆSTHESIA BY HORACE WELLS.

### HELD IN PHILADELPHIA, DEC. 11, 1894.

[ABSTRACT.]

Nearly one hundred visiting dentists, a large contingent of the local profession, and the students from the Dental Department, University of Pennsylvania, Philadelphia College of Dental Surgery, and from the Medico Chirurgical College, to the number of eight hundred, assembled in Association Hall, at 2 P. M.

Dr. J. D. Thomas, chairman of the Executive Committee, called the meeting to order, and introduced Dr. J. Y. Crawford, of Nashville, Tenn , President of the American Dental Association.

Dr. Crawford—Mr. Chairman, Fellows of the Dental Profession, Ladies and Gentlemen: At the meeting of the American Dental Association at Old Point Comfort, Virginia, on the second Tuesday of August last, a resolution to organize this memorial occasion was introduced by Dr. J. D. Thomas. This magnificent assemblage is the culmination of that resolution, and this is the gathering to celebrate the emancipation of the human family from pain by the discovery of anæsthesia. Fifty years ago to-day, Horace Wells made the first legitimate exhibition of anæsthesia, under proper restrictions, in a surgical way, which will entitle him to as much recognition at the hands of a just and liberal profession as was accorded to Jenner, Harvery and Pasteur The incident of the bruised knee was to Wells what the inadvertent remark of the milk maid was to Jenner. They were both pivotal contributions to the healing art!

Dr. Thos. Fillebrown, of Boston, was introduced, and read an exhaustive paper on "The History of Anæsthesia." He said: Great discoveries and events do not burst forth with Promethian suddenness, but wait long periods of hope and maybe despair. So it was with the discovery by Horace Wells, which robbed pain of its victory and the knife of its horrors. The ancient nations hunted for anæsthesia Homer mentions the inhalation of hemp for that purpose. Pliny and Apuliens refer to the mandragora wine; the Chinese used hemp in the third century; Theodoric described the *spongia somiferum* in the thirteenth century. Ether was also known at that time. In 1800, Sir Humphry Davy said nitrous oxide might probably be used to advantage in surgical operations where there was no great effusion of blood. But the suggestion bore not fruit for nearly half a century. Of the two anæsthetic agents, protoxide of nitrogen and sulphuric ether, the former was discovered by Priestly, described by Davy, and applied by Wells; the latter was discovered in the thirteenth century, named in the eighteenth, and applied in the nineteenth. In 1846, its use was made known by Dr. Wm. T. G. Morton, at the Massachusetts General Hospital. The anæsthetic properties of nitrous oxide were long known, and applied for the entertainment it afforded, but the chasm separating that from its true utility was unbridged until fifty years ago to-day; the man whose honor we celebrate, by inhaling the gas and having a tooth extracted without pain, fulfilled Davy's prophecy, and made practical anæsthesia a discovered and demonstrated reality. That event, the birth of pain's victor, was the source of our knowledge of anæsthesia, and made the name of Horace Wells echo around the world. In the following winter, Dr. Wells made a visit to Boston, and through the kindly offices of his former pupil and partner, Dr. Norton, who afterwards introduced ether, and was a claimant to the discovery of anæsthesia, made an exhibition to the Harvard medical class, by permission of Dr. J. C. Warren. The attempt was an apparent failure. The patient was incompletely anæsthetized and cried out, as they frequently do, and Wells was greeted with hisses of derision. The patient afterwards said he experienced no pain. This failure so disheartened Wells that he shortly abandoned the practice of dentistry, and committed suicide by severing a jugular vein. With the unparalleled honor of the discovery by Horace Wells the names of Dr. G. Q. Colton, Col. Samuel Cooley, Dr. J. M Riggs, E. E. Marcy, W. T. G. Morton, Oliver Wendell Holmes, Jackson, and Bigelow, are indissolubly connected. Marcy suggested ether to Wells instead of nitrous oxide; Morton made the first public application of ether for surgical anæsthesia; Jackson claimed to have suggested ether to Morton, and Oliver Wendell Holmes suggested the name anæsthesia, which is "repeated by the tongues of every civilized nation." Dr. Crawford W. Long, of Athens, Ga., claimed to have given ether three times in 1842-3. It was not printed until 1849. How could he resist flying with joyous wings to proclaim to a waiting world the great boon to humanity? The honor of the discovery is not accorded to Long, on account of its inauthenticity and its tardy publication. If he used it nobody knew it, and nobody used it because Long did. Then came the long list of pretenders, denominated generally "jump-up-behinders." In 1846, Sept. 30, Dr. Wm. T. G. Morton administered sulphuric ether for the first time. He made a public demonstration at the clinic of Dr. John C. Warren, at the Massachusetts General Hospital on Oct. 16, 1846. Morton and Jackson made a joint oath to the discovery of ether as an anæsthetic, and applied for a patent; the next year each claimed to be the individual discoverer. The application was discarded and declared not patentable. In 1847, the Paris Academy proclaimed Morton and Jackson the joint discoverers, but after a full hearing they decided that the honor belonged to Horace Wells, as the first to use gases and vapors to perform surgical operations without pain. In 1847, Sir James Y. Simpson, of Edinburgh, made experiments which gave chloroform as an anæsthetic to the world. Whom, then, shall the honor of anæsthesia's discovery make immortal. To each and all of the glorious names who made their individual contributions. But the noble, generous mind that conceived the grand idea, and conferred science's greatest boon on humanity belonged to the immortal spirit of Horace Wells. The facts maintain the truth of his priority; disputation but weakens the evident conclusion. In honoring his memory we should regret his sad and tragic end. It is a peculiar fact that his rival claimants both met violent deaths. Morton died suddenly of apoplexy, while Jackson was insane the last seven years of his life. Thus did the shears of fate cut the tent-ropes of their lives. Let us lay the chaplet of honor on his memory. Would we might with it crown his head. The everlasting epitaph of this martyr and hero will be,

TO THE DISCOVERER OF ANÆSTHESIA—HORACE WELLS.

Prof. James B. Garretson, of Philadelphia, was introduced.

After thanking the audience for their ovation, he said there was in the audience, one whose shoe latchets he was unworthy to tie—Dr. G. Q. Colton. We are here to honor Wells. Without a Colton, there could be no Wells. We are going to erect a statute to Wells. Let us begin by erecting a human monument—Dr. G. Q. Colton. Dr. Colton was present and seated upon the stage. Prof. Garretson made an address on "The Benefits of Anæsthesia to Mankind." He said he was overwhelmed at the contrast of the occasion and the speaker. It is not profanation to compare the reverence of a priest, when he uncovers the Host, in the profundity of holiness, to his own feelings when he speaks of this greatest of God's gifts to humanity, "Silence is Golden." Anæsthesia is the gold of silence; the silence of pitying lips in the presence of torture, shorn of its horrors. The ring of a bell is in its metal; the ring of a man is in his work. Horace Wells! It does not nor will not still; it rings and rings and rings in distinctness, albeit accordant and discordant sounds are everywhere around. He was a vessel capable of holding and was filled. In him the river of Lethe found a channel; everywhere over the land flows the stream of Nepenthe. The melody of music is not a note; the inspiration of a poet is not grammar. The ghost of anæsthesia was in the camel dropping on the desert, in the fields red with poppy. Ether was known to Frobenius. But who dreamed of the wonderland of Euthenasia, contained in the bottle on the chemist's shelf? Cadmius saw letters; Shakespeare saw the fullness of expression; Horace Wells saw in the room at Hartford, what had ne'er been seen before—anæsthesia. Some had seen the filmy halo that meant anæsthesia, but it was forgotten. Sir Humphrey Davy saw the outskirts of Elysium, but it was only in thought. The seership of Horace Wells was practical. While pain is painful, his name will be upon the lips of men. Apples ripened and fell before Davy guessed their secret; kettles boiled and hissed without telling their story; electricity flashed athwart the firmament long before it was harnessed; the sun's rays made perfect pictures.; but there were no takers of these gifts. Alexander told the story of steam; Pipon invented the cylinder; Fulton launched a steamboat, and Stevenson a train of cars; Daguerre made beautiful counterfeits of nature by the aid of the sun; and Mozart told by note what the flowers were doing. Was anæsthesia as anæsthesia known to surgery before 1844, as it became known in that year and has been known since? Not nitrous oxide, nor ether, nor chloroform; not rapid breathing but anæsthesia? The man of that year was Horace Wells. Anæsthesia! What would the world do without it? What could it do? What did it do? Think of an operation without it; a mother with tear-bedimmed eyes, in despair and misery, follows with trembling steps, the nurse who bears her first born to the operating table. The cries of the innocent babe mingle with the agonizing shrieks of its mother. It is held by force; she is torn from its side, and as she hears the heart-rending moan, falls down in a heap and is borne from the room screaming and crazed, cursing God as a being without mercy. Now, a child who has a deformity to be corrected, is cuddled while he crowingly inhales the subtle fumes of chloroform, and dreams of babyland embowered in roses while the operation is quickly accomplished. The name of the maker of this picture? Horace Wells! Hail to the poets, musicians, seers, whose statues of enduring brass mark our working places! Hail to all the seers! Immortals! Hail to Horace Wells!

The Chairman announced that the consideration of a plan for a permanent memorial to the discovery by Horace Wells would be entertained.

Dr. L. D. Sheppard offered some resolutions drafted by the Executive Committee, in reference to the discovery of anæsthesia, which were approved with unanimity.

Dr. R. Huey, of Philadelphia, moved that a committee be appointed by the President of the American Dental Association, to secure funds for the erection of a memorial in Washington city.

Approved. (Committee to be announced.)

The Chairman introduced Dr. G. Q. Colton, of New York, who gave the following Historical Remeniscence:

In the words of Anthony at the funeral of Cæsar, I can say:—

> "I am no orator, as Brutus is;
> But, as you know me all, a plain blunt man,
> For I have neither wit, nor words, nor worth,
> Action, nor utterance, nor the power of speech
> To stir men's blood; I only speak right on;
> I tell you that which you yourselves do know."

On the 10th of December, 1844, I gave an exhibition of the amusing effects of the nitrous oxide gas in the city of Hartford, Conn. After a brief lecture on the properties and effects of the gas, I invited a dozen or fifteen gentlemen to come upon the stage who would like to inhale it. Among those who came forward was Dr Horace Wells, and a gentleman by the name Cooley. Among those who inhaled the gas was Mr. Cooley. When under its influence, he began to dance and jump about. He ran against some wooden settees on the stage and bruised his shins badly. When recovering from the effects of the gas he went to his seat, next to Dr. Wells. Dr. Wells said to him: "You must have hurt yourself." "No," said Cooley, but at the same time he began to feel some pain in his legs. He was astonished to find his legs all bloody,—said he felt no pain till the effects of the gas had passed off. At the close of the exhibition, and while the audience was retiring, Dr. Wells came to me and said: "Why cannot a man have a tooth extracted when under the influence of the gas, and not feel it?" I replied that I did not know, as the thought had never entered my head. Dr. Wells said he believed it could be done; and that if I would bring a bag of gas to his office the next day, he would try it himself. The next day I took a bag of the gas to his office, and Dr. Wells called in Dr. Riggs, a neighboring dentist, to perform the operation. I administered the gas to Dr. Wells, and Dr. Riggs extracted a decayed molar tooth. On recovering and finding his tooth out, Dr. Wells clapped his hands upon his knee, and exclaimed, very excitedly, "*It is the greatest discovery ever made; I didn't feel it so much as the prick of a pin.*" That was the first tooth ever drawn without pain, and was the birth of anæsthesia. This operation took place just fifty years ago to-day. The discovery of anæsthesia, and its practical demonstration belong entirely to Dr. Wells.

Mr. Charles T. Wells, of Hartford, Conn., the only son of the great discoverer was presented to the audience.

Dr. Donnelly, of Washington, moved that the Committee be instructed to take into consideration the feasibility of establishing a National Memorial Hall in connection with the Wells Monument.

### BANQUET.

A magnificent banquet was held at the Union League, at 6.30 P. M.

Dr. E. T. Darby, of Philadelphia, presided as toast-master. Gen. Joseph B. Hawley, U. S. Senator from Connecticut, responded to the toast, "The Horace Well discovery—Its National Significance." He asked: How many thousand years were added to human life by the result of the great discovery? How many years of agony were thrown into the bottomless pit of oblivion. He knew the office in which this discovery was made. He knew the gay and frisky Col. Sam. Cooley who danced about and barked his shins, and was the innocent cause of the brilliant discovery. He exhibited the book of Wells Truman Smith, the venerable lawyer of Connecticut, and scores of Hartford's great men testified to the validity of Well's claim. He had been present the day before at the anniversary celebration in Hartford. It took those eighty-year old enthusiasts until midnight to erect the bronze tablet. He felt honored at being present at both celebrations.

Prof. James Truman, of the University of Pennsylvania, responded to the toast: "Anæsthesia as a Dental Discovery." Prof. Truman was reminded of the story of the ugly duckling that came out late, was picked at, and loved by no one. But it was able to swim and fly, and was adopted by a tribe of wild ducks, and afterwards became a beautiful swallow. Dentistry came in late—the last half century; but to-day her representatives have assembled here from fourteen States, in a high professional spirit, to do honor to one of her greatest men. Horace Wells lived in the period of transition in dentistry, when every man's hand was against his neighbor in professional matters. He was broader. He reached out after the great world that Goethe loved. He went to the centre of medical education—Boston—and was hooted out of the medical presence in disgrace. But every age has stoned her prophets, as every age will continue to do. Dr. B. W. Richardson, of London, in the last few weeks in *Longman's Magazine* has tried to tear the laurel wreath from Horace Wells and place it on Sir Humphry Davy. The parable of the sower is applicable. Priestly was the stony ground, Sir Humphry Davy was the poor soil —he was a dreamer. The receptive brain of Horace Wells was the good soil that bore fruit in the mastery of pain. When for the first time modern anæsthesia was exhibited, amid the anxiety of the surgeon, the excitement of the students, when for the first time they beheld a patient passive under the surgeon's knife, did anybody think of Sir Humphry Davy? When we look back over the great battles, the terrors of hospitals and the accidents of life, who can aggregate the benefits of anæsthesia? It was in the humble home of the Hartford dentist that the still small voice whispered in the wilderness of suffering. And that whisper will echo and re-echo until the cry of agony shall be silenced for ever. Oh, Dentistry! though not the first born of this our nineteenth century, in our heart of hearts we enshrine thee. Thou hast given anæsthesia to the world.

Prof. J. William White, of the University of Pennsylvania, responded to the toast, "Anæsthesia as a Factor in the Evolution of Surgery." The discovery of anæsthesia is a priceless gift to surgery. Like an enchanted Genii of the Arabian Nights it transports one from conscious suffering to the dreamy slumber of oblivion. If it had contributed nothing more to the victories of surgery than the transformation of a screaming sufferer into a plastic, unconscious patient for the surgeon's knife, it had added incalculably to its efficiency. But that is the least of its blessings. It brought possibilities of an incredulous advance. Hundreds of operations undreamt of in 1844 have saved the lives of countless thousands. The processes of disease in regions uninvaded in pre-anæsthetic days, were helpless and hopeless before the inspiration of Wells fifty years ago. The advance of this period has outstripped that of eight hundred years. In it, aseptic and antiseptic surgery has developed, and almost wiped out certain forms of suffering, disease and death. Surgery has not reached its culmination. Investigation, research and experiment are advancing rapidly. The prizes are still great. Tubercle and cancer remain to be conquered, and though we may not live to see it, it will ultimately be accomplished. The age is full of glorious men vigorously anticipating the splendid hopes of the future. All glory to Horace Wells, the builder of the foundation and the layer of the corner-stone

Prof. Horatio C. Wood, of the University of Pennsylvania, responded to the toast, "The Debt of Medicine to Anæsthesia" Once there were two twins. One was lusty and eager, always shouting its own praises; at the fore front of battle, revelling in blood, accident and death. The other was modest and retiring, thinking much but speaking little. And one was surgery and the other medicine. To the twin surgery, anæsthesia came as a great gift. To medicine, it didn't at first appear to be such a great boon. But there are now many diseases that attack the mortal frame that could not be relieved without the great gift from Hartford. Were it not for anæsthesia, few would have the courage for vivisection, and were it not for vivisection, there were no modern medicine. Anæsthesia has made modern physiology, antiseptic surgery and advanced medicine the great wonderful structure that we stand off and contemplate with such reverential awe. That is what anæsthesia has done. Not simply to quell pain momentarily, but made possible modern medicine. He hoped the dental profession would erect a monument to one of their guild who was such a benefactor to mankind. He did not know of a single statue erected to a medical man in the United States. When Leidy died, the greatest man Philadelphia ever produced, the one man who was ever crowned by the immortal leaf of the French Academy, the newspapers only had five or six lines about him.

Col. Alexander McClure, Editor of *The Times*, Philadelphia, responded to the toast, "The Mastery of Pain from the Standpoint of the Layman." Col. McClure remembers the transition of dentistry from a critical condition to its present position of wonderful achievement. He remembered when the blacksmith of the village pulled teeth with a gimlet having a screw in its end, and the itinerant dentist "stood" one day at one place and the next at another. He recollected the introduction of anæsthesia into the faculty forty-five years ago. He was then publishing a country newspaper—the only time in his life when he thoroughly understood the newspaper business. He and his apprentice instituted a series of experiments. The apprentice proposed to have a young physician give him chloroform; the Colonel was quite willing that it should be. It was administered with great success. Every case of type being upset. He claimed some credit for its advance. About thirty years ago he was suffering with an aching wisdom tooth. He had read of the gas. He came to Dr. Thomas, saw the list of some eighteen hundred persons who had taken it successfully, but he saw no instruments. He took a deep inhalation, then another, then . . . ! Suddenly he woke up, and asked if the tooth had been pulled. He was assured by seeing the offending member. Since then, when he has a tooth to be extracted, he quits work at mid-day, walks quietly to the dentist's office, takes a whiff of gas, and all is over. Dr. White tried to cut him to pieces seven times, but he was ignorant of the pain. He was satisfied that his life had been saved by the operation, and but for anæsthesia he would not have been present.

Prof. Wilbur F. Litch, of the Pennsylvania College of Dental Surgery, responded to the toast: "The Development of our Knowledge of Anæsthesia." He said the discoverer of anæsthesia had done more to promote the happiness of mankind than all the philosophers from Sophocles to Mill. In 1832, Valpean declared painless operations in surgery a chimera; but, later, he did an amputation under ether. The ancients sought for some snalgesic in mendragora, hyoscyamus, opium and hemp. The stupefying effects of alcohol were more safe and effective. The marvel is why alcohol to its full intoxicating effect was not systematically employed. "Years teach much which days never know."—(Emerson.) Ether was known five hundred years; nitrous oxide seventy years before Wells time. Anæsthesia is a flower that has blossomed slowly on the cross of suffering. It is recorded that the Romans offered a Lethal draft to him who bore the typification of human suffering. Humanity to-day drinks of subtler influences. He referred to the report of the Hyberaded comission on chloroform, and mentioned the use of cocaine in the production of local anæsthesia. Ideal anæsthesia, one that was perfectly free from danger, remained to be discovered, At present, nitrous oxide with oxygen is the best but for mechanical difficulties.

District Attorney Geo. S. Graham, of Philadelphia, responded to the toast, "The Medico Legal Aspect of Anæsthesia." The toast reminded him of Daniel O'Connell calling a man a nefarious ruffian because the phrase was high-sounding. The story of a man knocking a hole in a cellar wall to let the dark out was applicable to it. Anæsthesia in its broad sense including alcohol, made many subjects for the legal surgeon's knife. When Dr. Thomas gave him gas for the extraction of a tooth, he heard a seraphic symphony from the Heavenly spheres, but when he awoke, he found the melody came from a music-box, and was administered with malice aforethought. That was the first connection of anæsthesia with the law He said law was not in sympathy with vivisection—he once lost a dog himself. The highest tribute from a sister professiou is the reiteration of the praise bestowed by one's own profession. If a man lives in their memory, and is honored as the discoverer of a great good to suffering humanity, that is the loftiest pedestal on the footstool of God. Esteem and honor to pioneers in discovery and advancement. The whole world joins in sweet acclaim of praise to the memory of Horace Wells!

Rev. S. D. McConnell, of Philadelphia, responded to the toast, "The Humanitarian Aspect of Anæsthesia." Most persons have learned the ability to escape from the text; but he would rather be the discoverer of anæsthesia than to be any man that ever lived. When all the achievements of this country shall be forgotten, this one great controlling event that happened, once in the history of humanity, will remain. The old books on theology discussed at interminable length the meaning and use of pain, claiming that it was eternal, insoluble, the result of evil, and the punishment therefor. The measure of sensibility to pain is the measure of civilization. Low civilization is comparatively indifferent to pain. This is an age of physical anæsthesia, of moral and mental anæsthetics. All the philosophizing about pain cannot make us bear with equinimity some other fellow's pain. Pain is demoralizing, and its relief is elevating. It begets gentleness of manners and thought, tenderness and compassion. The man who has done this, has taken out part of the unspeakable anguish of parturition, has saved innumerable lives, has enabled timid souls to look serenely upon suffering, and walk triumphantly to the end.

Dr. G. Q. Colton related some amusing experiences in connection with the administration of nitrous oxide and tooth pulling, and concluded with the masterly advice of Polonius to his son Laertes.

Mr. Charles Wells, the only son of the immortal dentist, gave some personal recollections of his father.

Adjournment.

## THE ACADEMY OF STOMATOLOGY.

This new dental organization, recently established in Philadelphia, bids fair to assume a useful place among the local societies of this city. It is already well *en train*, and its membership consists of about fifty of the most progressive, earnest and intelligent dentists in our community. It derives its name from the Greek word *stoma*, signifying mouth. A very interesting meeting was recently held, at which Dr. E. C. Kirk, the essayist of the evening, demonstrated, practically, the administration of nitrous oxide mixed with oxygen, according to the method of Dr. Frederick Hewitt, of London, England. In this combination of the gases this almost safe anæsthetic is robbed of the little danger to life which it possesses The mixed gases were administered by Dr. Kirk by means of the Hewitt apparatus, and teeth extracted for two young ladies, by Dr. J. D. Thomas. The time of administration *was lengthened* by this combination, and the period of anæsthesia was likewise prolonged, the former being of little moment, the latter a decided advantage. It was generally noticeable that the skin, countenance, lips and general appearance of both patients were normal, and the anæsthetic state entirely free from all excitement, greatly resembling ordinary deep sleep. Dr. Thomas has pursued a similar plan in his administrations of $N_2O$ only instead of using a complicated apparatus like Dr. Hewitt's, he permits the patient to inhale an occasional breath ot air through the nostrils, while he takes the gas into the lungs through the mouthpiece. Dr Thomas demonstrated his method with gas drawn from a large gas bag. He is opposed to the employment of the flexible rubber hood, as he relies on the color of the lips as the best indication of asphyxia, which the hood would prevent his seeing.

The meeting was well attended, the tone dignified and intelligent, and general satisfaction pervaded the assembly. It is designed to secure a hall or place of meeting for the Academy, where all the dental periodicals will be supplied for the use of the members, and where a complete library, laboratory, reading room, and all the other adjuncts for the improvement and advance of the profession will be at hand. The society has our hearty endorsement and good wishes for its success and a long life.—Ed.

[WE reprint from "Ash & Son's Quarterly Circular," the following account of "The Mastery of Pain," *as it offers interesting reading matter* on the subject of Anæsthesia, which has claimed so much attention within the past month because of its recording the fiftieth anniversry of its discovery by Dr. Horace Wells. We are rather astonished that the eminent author of the paper should make the effort to deprive Dr. Wells of the honor of the discovery, when so many accord to him that honor. We are likewise more astonished at this effort of his because he is an Englishman, the English being proverbialy generous, and boast of that "FAIR PLAY" which they hold to it as a national incentive. No one wishes to deprive Sir Humphry Davy of the honor of stating that Nitrous Oxide Gas was an Anæsthetic, but we do wish to say that he had no hand in making use of the anæsthetic he discovered for the mastery of pain as Dr. Wells did, by taking it himself and submitting to an operation to personally prove its value, and then generously offering his discovery to the world for the benefit of humanity.—ED.]

# THE MASTERY OF PAIN—A TRIUMPH OF THE NINETEENTH CENTURY.*

BY SIR BENJAMIN WARD RICHARDSON, M. A., M.D., L L.D., F.R S.

## AN ANÆSTHETIC VISION.†

"I felt a sense of tangible extension highly pleasurable in every limb; my visual impressions were dazzling and apparently magnified; I heard distinctly every sound in the room, and was perfectly aware of my situation. By degrees the pleasurable sensations increased; I lost all connection with external things; trains of vivid visible images rapidly passed through my mind, and were connected with words in such a manner as to produce perceptions perfectly novel. I existed in a world of newly connected and newly modified ideas. I theorized; I imagined I had made discoveries. When I was awakened from this semi-delirious trance by Dr. Kinglake, who took the bag from my

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* From *Longman's Magazine*, by the kind permission of the Author and of Messrs. Longmans, Green & Co.

† The members of the Dental Profession in America are preparing to celebrate "the fiftieth anniversary of the discovery of the anæsthetic property of nitrous oxide gas by Horace Wells, of Hartford, Conn.," on the 11th of December, this year, but Sir Benjamin W. Richardson proves, in this Paper, that "by every rule of justice and of truth Sir Humphry Davy deserves the credit of the discovery," and that Horace Wells is entitled to the credit of the *practical application* of the discovery, "by a test operation performed on himself."

Sir Benjamin W. Richardson's statements are confirmed by the following brief quotations from well-known American works:—

*Harris's Dictionary of Dentistry.*—"Sir Humphry Davy, in 1799, first discovered its anæsthetic property upon inhalation, and, in 1844, Dr. Horace Wells, of Connecticut, applied it to dental purposes."

*Dental Cosmos, June, 1860, p. 594.*—"With regard to *priority in suggesting the use* mouth, indignation and pride were the first feelings produced by the sight of the persons about me. My emotions were enthusiastic and sublime, and for a minute I walked about the room perfectly regardless of what was said to me. As I recovered my former state of mind I felt an inclination to communicate the discoveries I had made during the experiment. I endeavored to recall the ideas; they were feeble and indistinct. One collection of terms, however, presented itself, and with the most intense belief and prophetic manner I exclaimed to Dr. Kinglake, 'Nothing exists but thoughts! The universe is composed of impressions, ideas, pleasures, and pains.' About three minutes and a half only had elapsed during this experiment, though the time, as measured by the relative vividness of the recollected ideas, appeared to me to be much longer."

The vision above related in striking and truthful language conveys a description by the illustrious Sir Humphry Davy of the effects on him of nitrous oxide gas, the gas used now so generally for rendering tooth-extraction painless—the gas which gave the key to all our methods of modern times for the mastery of pain by the process commonly known in these days as a process of anæsthesia. Davy, at the time he wrote the sentences above quoted, had learned the fact that the gas he was experimenting with had the effect of separating the person who breathed it from the ordinary surrounding world, and of rendering him oblivious of common sensibilities. This was a first step, and it led the ardent inquirer to the study of pain and its abolition. It led a poet as well as an experimentalist into further inquiry, for Davy had not been the great man he was but for the true poetic spirit with which he was so richly endowed. He went on his way subjecting himself and many others to the influence of the magical gas, until at last he struck out a direct practical idea in the following words:—"As nitrous oxide in its extensive operation appears capable of destroying physical pain, it

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*of nitrous oxide* in surgical operations, the *credit* undoubtedly belongs to Sir Humphry Davy," and . . . . "the credit of first making a *practical application* of this suggestion unquestionably belongs to Horace Wells."

*Dental Cosmos, May, 1864, p. 597.*—"There appears to be no reason to doubt that Sir Humphry Davy was the first to observe the property of nitrous oxide gas of producing insensibility. A note dated either in 1799 or in 1818, and contained in his 'Researches on Nitrous Oxide Gas,' suggests its trial in surgical operations, inasmuch as it appeared capable of destroying physical pain, Sir H. having himself used it to relieve violent attacks of toothache. The experiments of Thenard agree with those of Davy; it was, however, an American dentist, Horace Wells, who applied it practically." (*American Druggists' Circular.*)—C. A. & S may probably be used with advantage during surgical operations in which no great effusion of blood takes place."

This sentence, published in the first year of the present century, was the first note announcing anæsthesia or the mastery of physical pain, and heralded a discovery and practice of the century second in importance to none.

But to claim for it absolute originality would not be true. There had been attempts in previous centuries, as many of us have related, to remove or lessen pain, and particularly to reduce or remove that acute pain which attended the operations of the surgeon. In the oldest days of medicine mandragora had been used as a potion for this purpose, and Pliny, following Dioscorides, had given a prescription for a wine that had the power of rendering the person unconscious to the fire of the cautery or the cut of the knife. The art died out; yet it was a splendid art, and so perfect that centuries after it had been forgotten I myself, following the Dioscorides prescription to the letter, made his anæsthetic wine of mandragora, and found that it did actually produce the required narcotism in such good form, that in the absence of the more manageable anæsthetic agents we now possess, it might still be used with success by those who have to wait for the surgical ordeal of knife or cautery, or both combined.

Moreover, there had been some attempts to make parts, about to be operated on, locally dead during the period of operation. A Neapolitan, in one of the fencing schools of Naples, had discovered the fact that by applying a glass flask charged with crushed ice over the surface of the skin, an insensibility could be produced which would be effective in temporarily removing sensibility whilst an operation was being performed—a plan which the late Dr. James Arnott modified and brought extensively into practice some thirty years ago, and which I further modified by the introduction of ether spray. Also, a few years before the era of Davy, a well known London surgeon, Mr. James Moore, a son of the distinguished Dr. Moore, and younger brother of the great soldier, Sir John Moore, the hero of Corunna, endeavored to assuage the pain of operation by making compression upon the nerves of the limb upon which the surgeon was about to inflict an amputation or incision.

All these attempts towards the mastery of pain were laudable, and were indications of the desire of men of science to carry out what has been, without any reasonable doubt, the one grand advance in the science and art of curative medicine in the hundred years of the immediate past.

The attempts failed, and probably would never have been looked on as more than curious pages of history had not Davy alighted upon the research which led to narcotic inhalation.

### THE DISCOVERIES OF HORACE WELLS, MORTON, AND JACKSON.

As things finally turned out, there was a delay of over forty years before Davy's original idea was practically realized. The physicists had to show that the vapor of sulphuric ether, inhaled by men or by animals, produced effects similar to those produced by the nitrous oxide. A dentist, Horace Wells, of Hartford, Connecticut, had to bring the nitrous oxide into service by a test operation performed on himself; two gentlemen of Boston, in America, Dr. W. T. G. Morton, a dentist, and Dr. C. T. Jackson, a professor of chemistry, one of them or both—for their relative merit is buried in mystery—had to administer sulphuric ether; in turn chloroform, methylene, and many other volatile anæsthetics had to follow, with various benumbing methods for the production of local without general insensibility. I date these advances back first to December the 11th, 1844, when Horace Wells submitted to a tooth extraction under nitrous oxide gas; and, next, to September the 30th, 1846, when, for a similar purpose, Morton introduced the vapor of sulphuric ether.

What this last introduction meant, we alone who remember it can fully appreciate. We were, at the onset, startled, and the facts, which were soon placed before the world, were subject of discourse in all classes of society; but the very novelty of them embarrassed us. When the news of the discovery arrived in this country, it was the event of the medical schools and medical societies in all the large centres. In London the first demonstration of the discovery was made in the house of Dr. Boott, of 24, Gower Street, where the operation, the extraction of a tooth, was performed by Mr. Robinson, a friend of Dr. Boott, a dentist in large practice in the same street. The patient was a lady named Miss Lonsdale, and the operation was entirely painless. Robinson, whom I afterwards knew extremely well from becoming connected with him in founding a practical school of scientific dentistry in England, has often related to me the details of this first important modification in the practice of English surgery. The news came to Dr. Boott by a letter from America,* in which the details of the administration of ether as an anæsthetic were supplied. The letter was written by the late Dr. Bigelow, of Boston, and was peculiar in more ways than one. The discovery had been originally announced and demonstrated by Morton, but, unfortunately for his lasting fame as a discoverer, not in a clear, simple, and open exposition. He kept back the chemical agent he employed as a secret worthy of a patent, and called it "Letheon." It was an attempt at concealment as foolish as it was unworthy, for the odour of "Letheon" at once betrayed to Bigelow that the substance was nothing more than pure sulphuric ether. Bigelow, so soon as he detected this fact, commenced to administer ether with success, and communicated the circumstance promptly to all he knew, as well as to his English friend Boott. Boott on his part was not slow to call in the assistance of Robinson in order to put the experiment to the test on this side the Atlantic. Robinson told me that he had just breakfasted on December 17, 1846, when he got the startling intelligence about ether-inhalation from his medical neighbor. A man of great enthusiasm and of quick action, he was round at Boott's "in a jiffy," expressing himself ready and anxious to have "the first fling" with ether. A patient was soon found in a lady—whose name I have given—who was about to be operated on by Robinson very soon under any circumstances, and who was "proud to be the first taster of painless surgery in England." The operators were a little troubled in making sure of pure ether, and when they were satisfied on that point they had to study how best to apply it. Robinson devoted the 17th and 18th of December "in rigging up an apparatus" out of a "Nooth's inhaler" armed with a flexible tube and mouthpiece; and on the morning of the 19th, in the presence of Dr. Boott and his family, at Boott's residence, he put Miss Lonsdale to sleep in a minute and half, extracted a molar tooth from her lower jaw, and saw her restored to consciousness and safety within a minute afterwards. When Dr. Boott questioned her about the extraction, she expressed the greatest surprise at finding the tooth was removed. All she had felt was a sensation of coldness around the tooth, caused, Robinson thought, by the coldness of the extracting instrument.

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* The letter was brought over by a vessel named the "*Areadia.*"

On December the 21st or 22nd, the famous surgeon Liston amputated a limb painlessly, under ether, at University College Hospital, the anæsthetic having been administered by Dr. William Squire, who is still in practice in London. Amongst those present on that occasion was my old friend, Dr. (afterwards Sir John) Forbes, the author of "A Physician's Holiday." He described to me that he never felt so near to falling on the floor in all his life, as he did when he witnessed the great surgeon Liston amputating a thigh while the patient was in deep sleep. In those days, in order to save pain, the surgeon cultivated rapidity of action, and such an adept was Liston that he completed the removal of the limb within the minute. This, combined with the momentous result of the annihilation of pain, was the cause of the sensation experienced by Forbes. It was not fear, it was not faintness; it was an emotion painful, as he expressed it, from its overwhelming surprise and pleasure. Everybody seemed pale and silent except Liston, who was flushed, and so breathless that when he broke the silence with the word "Gentlemen," he almost choked in its utterance.

The news of these startling results quickly spread, and excited quite an enthusiasm, sustained, for a considerable period, by the statements of those who were submitted to operation. One of these —Mr. Dixon, a surgical instrument maker of Tonbridge Place, New Road—described to Mr. Robinson "his mental status" during the administration of the ether and during the operation—again the extraction of a tooth. "I had," he said, "a most remarkable dream, in the course of which all I had done, and read, and known, and all the events of my early youth, seemed to be compressed into a circle. I then felt as though an evil spirit was endeavoring to triumph over me, but still my confidence in victory was predominant. The actual removal of the tooth seemed to be coincident with the last effort of the supposed evil spirit." In half a minute this patient was conscious of the presence of those around him, and in two minutes he had fully recovered. He had been completely unconscious of the operation.

In the hospitals of the metropolis, University College Hospital took the lead in employing the new means for the mastery of pain, but the others speedily followed suit. Mr. Fergusson operated at King's College; Mr. Lawrence, at Bartholomew's; Mr. Tatham, at St. George's, and so on, until the practice, in hospital, became the order of the day.

As a matter of course, the public as well as the profession of medicine took a lively interest in the astounding novelty, and one of the then London public was singularly affected by it. This was Prince Louis Napoleon Bonaparte, an exile living at King Street, St. James's with his eye on that Imperial power which, in due time, he won and lost. To him the strange discovery seemed to open up a new era of science for the service of humanity, He was one of the earliest of the outsiders to ask Mr. Robinson to give him an opportunity of witnessing a demonstration—a request immediately granted. He seemed to have looked upon the phenomena with an almost childish wonder, "as if he were under a fascination," and he was not alone in his admiration. It was indeed a revelation, "momentous," as Forbes expressed when he for the first time witnessed it.

### THE TRANSFORMATION IN PRACTICE.

In what has been stated above there is supplied an outline of the early history of practical methods for the mastery of pain in our own time, as I remember it from the events of the first days of the practice If this were the correct place for such an effort, it would be easy for me to introduce a great deal of controversial matter bearing on the priority of the discoveries and discoverers, leading up to what I have related, and ante-dating, as some have thought, the results narrated. I leave these lines of controversy, to describe, from personal observation and experience, the transformation which the mastery over pain produced on the minds as well as actions of men. I write as an aye-witness of the truth, who still retains the facts in perfect memory.

According to the legal rule of those days, I was passing through my medical studies at the time when the process for the abolition of pain was introduced. I had served a time of articled pupilship, and had entered into a second year of hospital practice, at one of the largest hospitals of the United Kingdom, the Royal Infirmary of Glasgow. I had passed, therefore, through a severe schooling in sight and hearing of pain, and was in a good condition to form a judgment of the change, physical and moral, which the splendid revolution in practice produced.

I remember, still even with sorrow, what operating day meant as each week came round. I had become, it is true, accustomed to the scene, and custom does, without doubt, bring the mind and heart to bear many severe necessities. When I asked my first practical teacher how he thought I should get through the ordeal of seeing and taking part in an operation, he replied that, as in learning to smoke, time brought tolerance, but that a man must keep his hand in if he meant to retain his firmness and presence of mind. I recall that when I had to witness the first capital operation, I sought the companionship of a student much older than myself, but it turned out that he was more nervous than I was, and prudently left the operating theatre as the patient entered it I made up my mind to face the ordeal bravely, and for a time I was quite taken out of myself by seeing the consummate calmness and dexterity with which the operator—the late Professor Lawrie, of Glasgow, "one of the most splendid operators" (I am using his distinguished rival, Sir William Fergusson's own words) "this century, or any century, ever knew"—proceeded in his painful task. "The quicker the surgeon, the greater the surgeon," was then the order of the day, and such was the rapidity in this case the operation was actually over, in so far as the major part of it was concerned, before the patient uttered a single cry. If all had stopped there, all had been well; but just at that moment, as if giving vent to a long-suppressed agony, the patient uttered a scream that went through me, and, in spite of the tenderness and firmness with which the nurses assured him it was all over, continued to scream and struggle, so that he had to be securely held whilst the final steps of the operation were performed. Some of my new comrades, neophytes like myself, became faint, and some left the theatre. I turned over, but kept my legs, saw in a kind of haze the man being carried away, and came back to thorough consciousness listening to the short lecture which Dr. Lawrie was delivering in relation to the reasons for the operation, the manner in which it had been conducted, and the chances for and against recovery.

Several weeks went over my head before composure of mind accompanied such scenes as these. I think we all got hardened at last, but it was not permanent hardening. If we were away a few times from the scene, we had a return of the terror, in a minor degree, so soon as we resumed work; and the eminent surgeon I have named told me he never woke on an operating day without feeling a load of care and anxiety that would not wear off until the labors of his day were ended. In this he was not alone, for Cheselden, the leading surgeon of the reign of Queen Anne, the surgeon who first restored sight to the blind by operation, and to whom one of his grateful patients addressed the couplet—

> So swift thy hand, I could not feel
> The progress of the cutting steel,

never undertook an operation without being blanched and experiencing a sensation of anxiety that was like a seizure, which all his moral courage could scarcely control.

### A PERSONAL RECOLLECTION OF EARLY ANÆSTHESIA.

As these memories of the days when the mastery of pain was practically unknown are read, the reader will not wonder at the statement that the most treasured day in my life is that day when I witnessed for the first time the physical miracle of the abolition of pain during a surgical operation, the grand transformation of the phenomenon of agony into the phenomenon of sleep. The news of Liston's trial of anæsthesia by the inhalation of ether was brought as soon as possible to Glasgow, and was conveyed at once to the different learned professors of medicine in that city. I was at the time one of the students in the anatomical class in Anderson's University, and according to custom the large class was seated in the lecture theatre,* waiting for the mid-day lecture. The Professor we were under was Dr. Moses Buchanan, a most zealous, able and enthusiastic teacher. The Professor was one of the most punctual men in the world in respect to lecture time, and after we students had sat for five minutes at least, with no Professor in view, we began to get a little bit restless and noisy, wondering what had happened. At last the janitor, John MacDougal, opened the door at the back of the lecture table, and the missing Professor appeared. To our astonishment he told us there would be no lecture that day; and then, not without emotion of pleasure, for he was as good a surgeon as he was an anatomist, he informed us that he had to communicate a piece of news which marked a new era in surgical science, nothing less than the discovery of a method by which the most important operations could be performed while the patient undergoing the operation was asleep. "I am," he added, "on my way to the Royal Infirmary to take part in the first trial of the new system there, and by-and-by we shall all meet to learn if the news that has reached us, and that seems to be satisfactory, is really true. If it be, this day is a red-letter day in all our lives."

As a matter of course, this news created the utmost excitement. We trooped off to the Royal Infirmary as fast as our legs would carry us, and in due time were crowding into the operating theatre. The operating theatre was then under the fine dome which still crowns the Royal Infirmary. The room formed a chapel on a Sunday, and in the rush for seats the best places were speedily secured. I and one or two other students got into the pulpit, which formed an excellent place for observation; others seized the precentor's pew—I think it was so called—both forbidden places except on such a memorable day. The late Professors—Lawrie, Andrew Buchanan, Moses Buchanan, with Dr. Fleming, Mr. Anderson and the house-surgeons and the dressers in their blue striped gowns, were in the arena and on the tiptoe of expectation. The task of operating belonged to Professor Andrew Buchanan, who, before the arrival of the patient, stepped forward and in a gentle and nervous manner, natural to him, described the news that had come from the Massachusetts Hospital, explaining that the process consisted in laying the patient in deep sleep by the inhalation of the vapor of ether; that it had been carried out in America and in London; that it was called anæsthesia—a word derived from the Greek, signifying "not to feel"; and that he and his colleagues, after due consultation, had determined to put the new method to the test with as much care and precision as they could command in a first attempt. The patient was then sent for, and came in with quite a smiling face, delighted with the idea of being cut without pain, and rather proud, I fancy, at being the first man in Scotland selected to enjoy the honor as well as the pleasure. At all events, he agreed with the utmost readiness to the proposal of the Professor that he should be put to sleep, and Dr. Fleming, with the house-surgeon of the day for Buchanan's ward, commenced to administer the ether vapor from a sponge surrounded by a towel. In a short time the patient—whose name, I think, was Macleod—began to talk and sing in a loud voice in the style not uncommon to the second stage (as we afterwards designated it) of the ether narcotism, giving us a line or two at least from "Bobby,"* and communicating one or two secrets which he might just as well have kept to himself. He then lapsed into perfect quietude, and soon afterwards was allowed to wake up with the operation completed, without knowing that he had passed through anything more than a curious dream, feeling, as he affirmed with a broad grin, just "a wee bit fou," and in no degree ashamed of his acquaintanceship with that condition.

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* The theatre in which David Livingstone learned his anatomical rudiments.

The day we witnessed this event, with some others like unto it, was indeed a red-letter day with us, for in it we had seen the last of the surgical science of excruciation and the opening scene of the mastery of pain. We were entranced. We made experiments on each other. I remember my much-esteemed fellow student, George Buchanan, of Glasgow, son of the distinguished Moses Buchanan, to whom reference has already been made, and at this moment one of the surgical lights of Scotland, offering himself, like a valiant young martyr, for experiment, and allowing his enthusiastic *confreres* to put him into the deepest ethereal sleep for the sake of practice; and I remember also the remark that when he came to himself again he looked about him, as if he expected that, for the sake of practice, some one might have lightened him of a limb or two while he sat an unconscious and helpless victim. I recall to mind that at a meeting of the "Faculty" at Faculty Hall, where the new subject was being sagely discussed by the sages of the profession, student John Chambers, a sturdy and frolicsome youth, having been put partially to sleep for experimental service, for which he had volunteered, rose from his doubtful sleep, and stalking up to the presidential chair, did there and then roundly box the ears of the official occupant of that distinguished seat, and was with some difficulty prevented carrying out further acts of violence, greatly to the amusement of all, except the President, and himself when, afterwards, he "came to."

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* The poet Burns.

The excitement of the first demonstrations of the discovery quickly quieted down, and the practice of anæsthesia became an accepted part of medical life. Paris took up the wondrous tale and confirmed it; the success in London reassured America; and before long the mastery of pain was an accomplished art common to all the civilized world. In the first month of the year 1847 Dr. James Simpson, of Edinburgh, administered ether for the purpose of lessening the great pangs and pearl of childbirth, and succeeded in showing that those pangs could not only be relieved, but prevented altogether, without danger either to mother or offspring.

### DISPARAGEMENTS.

As our enthusiasm died away, or gave place to that use which so soon becomes second nature, we began to hear disparagements from various quarters. I believe that the majority of mankind, medical and general, took to the advancement kindly, and certainly they who were most concerned in it, they who had to be subjected to surgical suffering, seized the beneficence of it without demur; a fact I can readily testify to, since I once put to sleep, for a comparatively slight operation, one who was amongst the worst opponents to anæsthesia until it came to be his turn to taste the benefits of it.

What, some one will inquire, could be the disparagements? (1) It was urged by those who had learned to admire the dexterity of surgical art, that the days of that art were doomed; that surgeons would become mere "puddlers"; and that a false sentiment and fear about pain, and the infliction of pain, would take from the Esculapian fraternity the boldest and manliest qualities. No more heroes of surgery would now be born. (2) It was said that to abolish pain would be to change the laws of nature herself; that pain is a safeguard; that it indicates, in cases of injury, the seat of injury, and, in some instances, the cause of injury; that if men learnt to minimise or prevent it at pleasure, they might annul it altogether, and invent a new constitution in which this sentinel of danger would be, at all times, off duty. (3) It was predicted that the most serious malpractices would follow the introduction of anæsthetic art. It was feared that the art would be used by the robber, by the murdered, by those who were desirous of committing deeds of violence for the worst purposes, and that, in short, it would be a means of putting the most dangerous and ready weapon of evil ever dreamed of into the hands of the evil disposed, the worst disposed of the whole community. (4) It was argued that the practice, however safe and successful it might be, was sinful; was opposed to the divinely appointed decree, and could not be sustained except in direct defiance of righteous law; for, was not man born to suffer, and was not pain a part of the curse that had fallen on man by his first disobedience to the Almighty will? (5) It was insisted on by a more practical group of objectors that, as the process of anæsthesia became general in its application, the mortality induced by anæsthesia would of itself be the death-warrant of the declared advancement, and bring all its glory to the dust.

A little later on I shall take occasion to point out how far these various prophetic warnings were justified by results. It will, however, be most methodical to treat, for a few minutes, on the course and further development of the science and practice of anæsthesia after it had been established and brought into general use.

### A NEW ANÆSTHETIC.—CHLOROFORM.

Man is a restless and inquiring animal. He never gets a new thing or new art but that he tries to improve it, or, at all events, supplant it by something he thinks to be newer and better, so, naturally, and as a matter of course, he soon began to ask if he could improve on ether as an anæsthetic. Ether was slow in its action, it had a disagreeable odor, and it required a rather complicated apparatus for its administration; these were objections which must be removed, and many began to seek for a better substance with which to master pain. The word *ether* got the first place and held the field by virtue of that priority. Whatever new thing was introduced it must be an *ether*, and the next that took the field was also an ether, in name at least. Since the year 1831 there had been in use in medical practice a fluid called *chloric ether*. It differed from what was known as sulphuric ether in that it was a compound or mixture, two substances commingled together. Sulphuric ether, commonly known simply as ether, is a fluid substance consisting of three elements, carbon, hydrogen, and oxygen, and made by the distillation of alcohol with sulphuric acid. It has distinctly its own specific qualities, its own specific weight, its own vapor density, its own boiling point, its own rate of diffusion, and its own solubility in other fluids, like water, alcohol, or blood. Chloric ether was not of this simplicity and unity of action. It had two parts, each part possessing its own particular properties. In the year 1831 an American chemist, Mr. Guthrie, distilled together chloride of lime and alcohol, by which he obtained an alcoholic solution of a substance to which this name chloric ether was applied by another distinguished chemist, Professor Thomas Thomson, of Glasgow. The alcoholic solution of this volatile and pungent substance went under this name of chloric ether, as it does to the present day. But what was the substance conjoined with the alcohol? Liebig separated it and named it *chloride of carbon* under the incorrect idea that it did not contain hydrogen. This incorrect idea was put right by Dumas, who also separated it from the alcohol, and by better analysis fully described and defined it and gave to it the name of *chloroform*. From that time chloric ether was made methodically by mixing together chloroform and alcohol, and to the initiated it was known to be a mixture of this character, but to the world at large, and even to the medical world, it passed, and passes, by its old name, chloric ether, ranking as an ether. When, therefore, improvements or variations began to be considered in anæsthetic practice, it was natural enough that some one, keeping in mind the word "ether," should suggest the trial of chloric ether. Two men quickly thought of it in this sense and gave it a trial. The one was Dr. Bigelow, of Boston, U.S.A.; the other, Mr. Jacob Bell, the then well-know chemist of Oxford Street, London. Dr. Bigelow did not succeed well in his trials, and gave the inquiry up for the moment. Mr. Bell was more successful; he caused anæsthesia in a considerable number of instances by means of chloric ether, and was struck, he told me, by the perfection of the sleep it induced, although perplexed and dissatisfied by the slowness of its action. He was able, however, to get the new ether tried for operations in the Middlesex and in Bartholomew's Hospitals. At Bartholomew's, Mr. Lawrence operated on patients under chloric ether, and was so satisfied with the results that he employed the agent in his private practice, thinking it was an ether.

It is the peculiar part of the course of discovery at this stage, that what was effected by chloric ether was due not to an ether at all, but to the substance which Dumas had called chloroform, and which was present in the mixture in the proportion of about twelve parts by volume of chloroform to eighty-eight parts of alcohol. It was not surprising that Mr. Lawrence, an operating surgeon of the strictest sort, should not appreciate this fact from a chemical point of view: but that Mr. Jacob Bell, a man whose life was practically devoted to the study of chemical preparations, should not have detected the active principle he was employing, is one of those curious circumstances in research that baffle calculation. In fact, he never could account for it himself, and I have heard him say that whilst he knew perfectly well that the so-called chloric ether was a mixture of chloroform and alcohol, having made the mixture with his own hands, and whilst he would have replied in an instant if the question had been put to him, that the alcohol could not possibly cause the narcotic action, and that, consequently; the chloroform did cause it, it never occurred to him to solve the riddle, he being misled, as he believed, by the use of the word ether, and the feeling that it was an ether and nothing else that was wanted. Had he by the merest chance been moved to the explanation of the effects that were manifested, he would, undoubtedly, have been the acknowledged, as he was the unacknowledged, discoverer of chloroform as an anæsthetic. Strangely, too, Professor Flourens, of Paris, one of the best living physiologists, experimented with chloroform itself and put it aside, perhaps wisely, on account of its danger to life.

Chloroform, then, was in use in practice before it was known to be; but, as a matter of necessity, the secret soon came out. How it came out may rapidly be narrated. Mr. David Waldie, of the Apothecaries' Company, Liverpool, an excellent pharmacist, who had been making chloric ether by adding chloroform to pure alcohol, divined what Bell did not divine, namely, that the substance in chloric ether which caused the narcotic sleep was the chloroform it contained. Being in Edinburgh in October, 1847, he told the fact of the use of chloric ether in London to Dr. Simpson, explaining that the substance at work was chloroform, and, recommending Simpson to try it, promised to make him a specimen for such trial. Some little delay took place in the fulfilment of this promise, and meanwhile Simpson, having got chloroform manufactured for him in Edinburgh, experimented with it in its pure state, and on November the 10th, immediately following, read a paper on the subject to the Medico-Chirurgical Society of Edinburgh, instantly published the paper under the title, " Notice of a new Aæsthetic Agent as a Substitute for Sulphuric Ether, " and began to use chloform for the mastery of pain in the human subject. Very few scientific medical essays have ever attracted so much attention as this on chloroform. Chloroform soon came into almost general use in place of ether, and the word itself became so common in the vernacular, that the people began to recognize it as synonymous with and more expressive than anæsthesia. The word entered into different parts of speech, patients were said to be "chloroformed," those who administered the liquid were said to be "chloroformists," and the saying "to chloroform" made a new verb. At the same time the name of Dr. Simpson, connected in the popular mind with the introduction of chloroform became a household word of first magnitude, the names of all his compeers and presidered as the true year of its origin. By every rule of justice and of truth Sir Humphry Davy deserves the credit of the discovery. Nothing ought to take from him that distinguished, is it too much to say, immortal honor. It is true he did not discover the first anæsthetic gas, nitrous oxide—that was the discovery of his illustrious predecessor, Dr. Priestly—but it was he who first ventured to breathe the gas; it was he who demonstrated its effects on living action and function; and it was he who, with the true genius for practical utility, first gave the key note to its service for mankind; who bade his successors take this gas for the great use to which it may be applied—for the extinction of pain in surgical operations. Had those experiments of Davy not been made by himself, and on himself; had the effects he experienced not been so splendidly described; and lastly, had the direction as to future work with the substance, for a specific object, not been so perfectly forecast and proffered, there seems no reason whatsoever why the mastery of pain should have been achieved as it has been. Certainly there is not the least indication that any of those who worked out the details from his suggestion have shown the slightest evidence or hope that they would have taken a single step except for his initiative. The way pointed out, many have done well in it; but all have moved on the one inspiration, and then only by accidental observation upon observation, each one a little and a little on cultivated ground.

## FATES OF SOME OF THE PIONEERS.

The three men most engaged in the application, at first, of Davy's instauration met with an unhappy fate. Horace Wells, who first submitted himself to a surgical operation under an anæsthetic, and to whom is usually given the credit of having been the practical introducer of the modern art, fell very speedily into melancholy. He saw his application of nitrous oxide almost immediately supplanted by sulphuric ether, and found himself unnoticed. In despair he went to New York, hoping there to secure full recognition, but before the time arrived for the discussion of his claims his mind went wrong, and he brought his life to a close, by his own hand, on January the 14th, 1848.

Morton and Jackson were scarcely more fortunate. They waged war against each other on the question of priority, and in 1853 Morton applied to Congress for a grant of money, on the claim that he was the discoverer. The friends of Wells opposed this claim; and curiously enough, another candidate, whom we in England had not before heard of, namely, Dr. Crawford W. Long, of Athens, Georgia, decessors, not excluding that of Sir Humphry Davy himself dropping out of mind as if they had never existed. In fact by one of those extraordinary frolics of fortune never explainable, Simpson, seventh on the list as expositors of anæsthesia, leaped into the first place, and for almost a generation was believed to be the actual author of the process by which the great blessing was brought into birth. I heard quite recently a fine scholar say, "that the only instauration of medicine in the present century was anæsthesia by Simpson," and assign to that authority not only that instauration, but the discovery of chloroform itself, the application of the word "anæsthesia," and the whole demonstration, as if it had been delivered to the world at one message from a shaft of Jove.

### SIR HUMPHRY DAVY THE TRUE DISCOVERER.

The period of 1846–7 may be considered as the birthtime of the practical application of the mastery of pain. The year 1800 may be conput in a prior claim and actually proved that, as far back as March the 30th, 1842, though he had never published the fact, he etherised a gentleman named Venables, and removed a tumor from him without causing pain. Dr. Long also performed other operations under the same conditions of etherisation, but he was out of court, according to the fixed rule of primary priority, becaused he never published his work. In spite of every effort the Committee of Congress refused to grant any pecuniary recognition to Morton, who thereupon went from Washington to New York in a state of such extreme mental excitement that Dr. Lewis A. Sayre and Dr. Yale were called to him, and did all they could with great kindness. Their labors were useless, for the man himself declined to carry out their instructions. He took his own desperate course, ordered a buggy, drove up Broadway to the upper end of the Central Park,* leaped out and ran into the lake there; then got back again, under persuasion, into the buggy, drove a short distance further, again leaped out, tried to jump over a fence, fell down insensible, and being carried into St. Luke's Hospital, died there within two hours. Jackson, his rival, outlived him, but became also mentally afflicted. In our country Dr. Simpson, in many respects a most remarkable man, received a baronetcy, and died full of days and honor. Mr. Robinson, the first operator here under anæsthesia, met with his death in a sad way. He had received some friends in his country house, and had been through his garden to see them homewards. On returning through his garden he picked up a garden-knife which had been left near a tree, and in lopping off a bough of the tree, which was in the way, accidentally divided his femoral artery and died from the loss of blood.

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* Was Central Park laid out in 1844?

But, amongst all the men since 1846 engaged in the first work for the mastery of pain, he who remains most in my mind is one to whom I have least alluded, I mean Dr. John Snow. The peculiarity of Snow was his true scientific spirit, and the breadth with which he surveyed the whole field of practice as well as research. It was he who first began to weigh and measure anæsthetic agents and compute their effects from their physical properties, and it was he who indicitated how the study of anæsthetics might be made to extend the scientific boundaries of the science of healing altogether. As an administrator he held the highest reputation, and twice was summoned to administer chloroform to the Queen. But no practical success drew him from the path of original research to which he devoted himself. With him I worked as with an elder brother, and, knowing his worth most intimately never wondered that all praised it. On June the 9th, 1858, whilst writing the last page of his great work on "Chloroform and other Anæsthetics," he was seized with a stroke of paralysis, and died on June the 16th, in the forty-sixth year of his age. By a curious coincidence the pen fell from his hand as he wrote the word "*exit*," five lines from the ending of the final page; the rest of the page I, who afterwards edited the work, was able to fill up from the rough copy he had previously prepared.

Some day I hope to describe more minutely the history of the practical mastery of pain, from its origin. Should I fail in that expectation, the historian of a future day, intent on preserving the first details of one of the miracles of the nineteenth century, may accept what has been related above in all simplicity of knowledge, with reliance on the fidelity of one who has been throughout an eye-witness of the practical development of the modern art, and an active partaker in the labors that have lead to its rich rewards.

## To Prevent Nausea in Taking Impressions.

Allow the patient to inhale, before and during taking the impressions, spirit of camphor.—*Zahntechniche Reform.*

To USE a matrix on a proximal cavity when the adjoining tooth is missing, fill the space with modelling compound; warm the metal matrix and press it in between the tooth and the mass.

THE

Dental Office and Laboratory.

FOURTH SERIES.

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# LOCAL ANÆSTHETICS.

By Dr. Naamen H. Keyser, Germantown, Pa.

Paper read before the Pennsylvania Association of Dental Surgeons.

From a time far beyond the memory of man efforts have been made to secure immunity from pain by local applications. They antedate general anæsthesia, and in certain cases if at all effective are much to be preferred. The introduction into materia medica of that wonderful and potent remedy, cocain, has stimulated research in this direction, and seems to have made more effective and opened a wider field of usefulness to local anæsthetics. Formerly, the best that could be hoped for was a mere surface deadening of the sensibility, for, except the various freezing processes, the effect of local anæsthetic agents penetrated the tissues but slightly, and was useful only in trifling operations. The use of these agents hypodermically has, however, overcome this limitation, and if they can be safely so used, their sphere of usefulness will be very much enlarged.

It must not, however, for a moment be forgotten that the hypodermic use of a remedy ceases to be a local application only. Morphia in solution must be kept constantly in contact with the dermic tissue a long time in favorable locations, and under favorable conditions, before it exerts any systemic effect. A very small portion, however, hypodermically injected almost anywhere, will produce its characteristic systemic effect immediately, in some cases, indeed, before the needle of the syringe is withdrawn.

A question has arisen in regard to local anæsthesia produced by hypodermic injections, whether the anæsthesia is the effect of the remedy used, or whether the pressure of the injected fluid, for a short time, until it is diffused through the tissue, by its mere presence, independent of any obtundent property it may possess, produces the observed effect. Experimenters are on record who claim that they have produced a local anæsthesia as pronounced and as profound, by pure water alone, as that produced by potent obtundent agents.

The use of hypodermic injections for the purpose of local anæsthesia is of too recent a date to permit definite conclusions to be drawn. Many cases are reported in which it seems to have had the happiest effect. On the other hand, now and again, cases are reported which impress the need of great caution in its use There is one objection that is likely to greatly limit its usefulness, at least until its efficiency has been well established and is generally recognized. No matter how perfect and complete the anæsthesia may be, no matter how painless it may render the operation, it does not of itself restrain and control the patient's will, or calm the patient's fear. So long as this is the case, these will greatly limit its usefulness. It is possible that in the future, should the results obtained from it warrant a continued and more extended use, that the public may place in it sufficient confidence that they will "hypnotically" as calmly submit to operations under its influence as they now do while unconscious under a systemic anæsthetic.

In compounding solutions to be used hypodermically to produce local anæsthetic effects, two points must be born in mind; they are equally important. First: The injection itself seems to lower the vitality of the invaded tissue, or perhaps breaks up its continuity, thereby producing a wound greater than the mere stab of the needle; or inadvertantly may introduce or favor microbic disturbance; however this may be, it not infrequently happens that the wound made by the syringe does not heal kindly, unless the injected fluid contains a notable portion of a harmless, preferably a stimulating, germicide. Secondly: If cocaine or other such like potent drug is used, the solution should contain sufficient of an agent systematically antagonistic to it, to thoroughly control and neutralize its systemic effects, so as to thoroughly localize its action. This seems to be quite necessary if we would avoid unpleasant after effects.

The cases where local anæsthesia is preferable to general anæsthesia are many. A notable number of our patients object to becoming unconscious while being operated upon. And again, the physical condition may interdict the use of any anæsthetic that profoundly impresses the system. Patients who are anemic, and those who suffer from heart trouble or impairment of other vital organs, are not desirable subjects for the administration of ether or nitrous oxide. A specialist in constant practice may at times take a responsibility that it is not wise or even right for one to assume whose time is not exclusively devoted to their use. There are still others whom it is diffi cult to thoroughly anæsthesia. There seems to be a place and a need in dental practice for an anæsthetic that all may safely use, something that does not require bulky apparatus, that is always ready and at hand, that may be quickly applied, and does not interfere with other operations of a different character which may immediately follow.

This want has been long felt. The various freezing processes, dating back half a century or more, so far seem to have reached in the use of ethel chlorid the culmination of their usefulness, and we may, I think, safely say that of the freezing methods ethel chlorid more nearly fills the want than any of its predecessors, and that it has a place, though a limited one, in dental practice.

Where so profound an effect is required as that called for in extracting, the hypodermic methods alone seem to be effective. I notice some little difference in the practice of those who recommend it; while some thrust the needle deeply into the tissues adjacent to the tooth, others seem to endeavor to place the obtunding agent in the alveolar socket, and others again endeavor to so place it as to effect the nerve supplying the parts to be operated upon, in order to do this, making the injection at some little distance from the teeth. There is also a great difference in the composition of injected fluid. The following formula I have used with gratifying results, injecting from five to twenty-five minums into the gum tissue adjacent to the tooth.

| | | | |
|---|---|---|---|
| R. | Cocain, | gr. 42. | |
| | Tinc. Iodine, | m. 18. | |
| | Iodide Potassium, | gr. 4. | |
| | Carbolic Acid, | m. 12. | |
| | Witch-hazel, | oz. 2. | |
| | Glycerine, | oz. 2. | |
| | Aqua Distilled, | oz. 6. | M. |

Dr. W. F. Heuson's formula:

| | | |
|---|---|---|
| Cocain, | gr. 42. | |
| Chloral Hydrate, | gr. 6. | |
| Carbolic Acid, | m. 6. | |
| Tinct. Iodine, colorless, | m. 10. | |
| Listerine, | oz. 2. | |
| Aqua Distilled, q. s., | oz. 5. | M. |

The last formula contains one per cent. of cocain only. At the present time the market is flooded with secret preparations intended for hypodermic use; one, the leading depot, handling 37 different preparations. Appended to the circulars announcing them I find a long string of dentists names, among them a few well known, certifying to the success with which they have used them. I have been astounded at the array of prominent men who have given their endorsement to these propriatery preparations for hypodermic use. Should serious results attend their use, and a law suit follow, I have wondered what defense a dentist could make after using a preparation whose ingredients were unknown to him? Would the fact that they had been publicly recommended by men who are recognized as men of authority amount to much as a defence? Now and again I have noticed in the secular press accounts of accidents from hypodermic injections for tooth extraction, and occasionally a notice of a law suit for mal-practice. How these have resulted I do not know.

The care of the syringe is an important matter. It must of course be kept clean and asceptic; it must also be kept in good working order. If not used for some time the plunger is apt to dry and become loose and incapable of exerting sufficient pressure to force the fluid into the tissues. Those provided with a cap covering the nipple on which the needle is secured are less liable to this evil. Moistening the plunger with neats foot oil also tends to prevent this drying out.

A number of preparations have been suggested for producing a local anæsthesia by topical application sufficiently profound for extraction. By their use the pain is materially lessened, indeed in some cases the operation appears to be practically painless. Where this can be effectively used it is much to be preferred. With ordinary care there is but trifling risk of doing any injury, or of producing anything more than a local effect. In the use of all these preparations it is essential that the gums should be carefully dried before the application is made, and care should of course be used to prevent the preparation extending to adjacent parts, particularly not to use it so freely as to risk its being swallowed; also to be very sure that the cotton on which it is applied is removed before the patient leaves the chair. Lately I have been experimenting with a few of these preparations used with an atomizer, and have been favorably impressed with the results. The atomizer which has proved most serviceable to me is represented in Fig. 1. The syringe part is of the Thermo-Cautery A, sold by Yarnell & Co. With several feet of tubing it can be attached to the Phœnix Throat Atomizer B, which is a very convenient form. By means of the long tube, the bulbs may be placed on the floor and worked with the foot, while the atomizer is directed by the hands.

Or the bulb may be worked by one hand and the atomizer directed with the other. As the formula contains camphor, the small tube is apt to get clogged, and thus attention is necessary to prevent this. The anæsthetic should be emptied from the bottle and plain alcohol placed in it. The bulb should then be worked, in order that the alcohol may dissolve all particles of camphor adhering to the tube of the atomizer. By means of the extra bulb, covered with netting, a constant stream or pressure is given to the atomizer, providing a continuous spray.

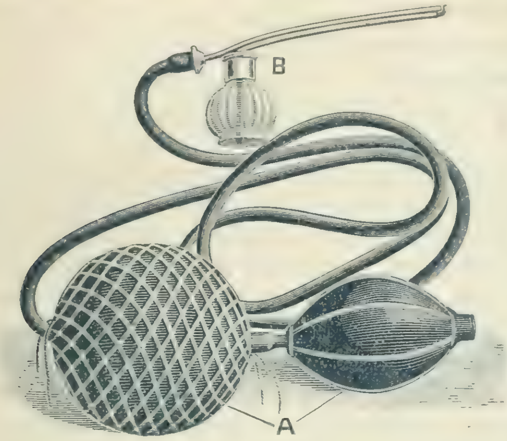

Fig. 1.

A preparation suggested by Dr. Solars, Dental Cosmos xxxvi–247,

| | |
|---|---|
| Sulfuric ether, | ℥ iss. |
| Chloroform,. | ℥ iv. |
| Gum Camphor, | ℥ j. |
| Alcohol, 98 per cent., | ℥ ij. |

has given me good results. With this there is, when used with the spray apparatus, a chilling effect; it is hardly sufficiently pronounced to call freezing. I am impressed, however, that it assists very much in producing the anæsthetic condition. With this I have extracted a number of teeth, not perhaps painlessly, but the pain has been so much reduced that the patient did not complain, indeed it was very bearable. The pain attending the preparation of a root for crowning, or adjusting a crown, or such like operation, I am convinced, may by this means be readily and safely controlled. Care is needed to so protect the mouth with napkins as to confine the spray to the parts it is desired to effect, and also to so guard it that the patient may not breath the drugs used.

Aconite and chloroform has a good reputation as a topical application, especially for such operation as opening an abscess, obtunding the gums before applying the rubber dam, clamps, regulating apparatus, etc. A fifty per cent. aqueous solution of cocaine as a topical application may be safely used in most cases where such an application is called for.

Dr. Bernard Herz's formula :—

| | |
|---|---|
| Strong Ether, (Squibbs) | oz. 1½. |
| Pip Menthol Crystals, | dr. 1. |
| Canabis Indica, fluid extract, | gt. 20. |
| Oleum Mentha Pip., | gt. 15. |

To this may be added half an ounce of a 10 per cent. aquous solution of cocaine, is another preparation which has proved useful.

Gum Camphor, fifty-five parts, mixed with forty-five part Crystalized Carbolic Acid, I find useful as a local anæsthetic for simple operations. It is particularly useful used topically in extracting loose teeth, or after extraction where there is a tendency to hemorrhage. I might multiply these various formulas almost indefinately, and might name a host of drugs which have from time to time been recommended to relieve the pain attending dental operations, or the pain attendant upon dental irritations of various kinds. In closing the paper I will briefly call your attention to another class of remedies mostly used in operations upon the dentine, and generally known as obtundents. I have recently experimented with the oil of horse radish and the oil of mustard. These two drugs, while differing somewhat in odor, are closely allied if not identical in chemical composition. The oil of mustard is extracted from the black mustard seed; they yield two oils, one is extracted by pressure and differs very much from that known as the volatile oil; the latter does not exist in the seed but is produced by a chemical change which takes place when the crushed seeds are placed in water. It is this volatile oil with which the dentist is concerned. The oil of horse radish, I am inclined to think, is not usually found in commerce. I have failed to find it, and am informed that for all practical purposes the oil of mustard takes its place. I have used for obtunding sensitive dentine the following formula :—

| | |
|---|---|
| Ether (Squibbs) | dr. ½. |
| Oil Mustard, | gt. 15. |
| Oil Cinnamon, | gt. 20. |

This should only be used when the rubber dam has been adjusted around the tooth.

In conclusion. I have not attempted to exhaustively treat this interesting subject. It has recently so widely expanded that until time shall have settled the true value of its latter developments it is impossible to do so.

# DR. BROCKWAY'S IDEA FOR FILLING LABIO-CERVICAL CAVITIES.

For some months past the following "Dot" has been going the rounds of all the dental journals published in this country :—

> Take a small sized sewing needle ; at the distance of, say, three-quarters of an inch from the point, bend into the form of an S the point of the needle forming the long leg, useful in filling labial cavities under the gum ; stick the point into the neck of the tooth below the rubber dam, just above the edge of the cavity, lift the upper edge of dam over the eye end of the needle, and the resiliency of the rubber will keep the needle in place and the cavity dry. It is far ahead of any clamp for the above purpose. To prevent the eye of the needle penetrating the dam, put a little bead of shellac on the end.—*Dominion Dental Journal.*

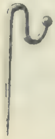

Fig. 1.

Believing that there was more merit in the idea than was generally thought, and not understanding the manner of its application thoroughly, we have corresponded with Dr. Brockway on the subject for the benefit of our readers, and now lay before them further suggestions from him on the matter, as well as illustrating the device as well as its application. Fig. 1 represents the needle bent as he indicates, as well as showing the drop of shellac melted on the eye of the needle in order to better engage the rubber dam. To bend the needle in the form of the letter S as he indicates, the eye part of the needle should be heated, otherwise in the attempt to bend it would snap. But it is important that the temper should not be taken out of the point of the needle. To do this the needle should be held between the noses of a pair of flat nose pliers, and while thus held the eye part heated in order to facilitate the bending.

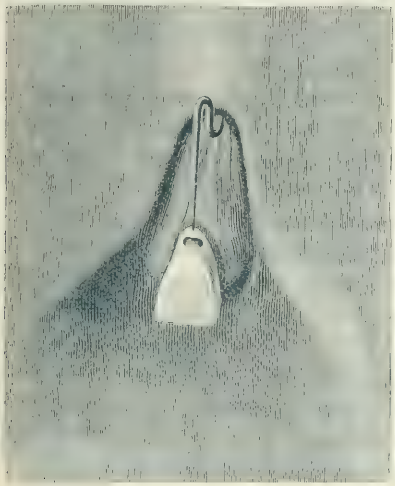

Fig. 2.

After the cavity is prepared, the rubber dam is applied, and the rubber dam strap placed around the head, and the dam seized on each side next the cheeks. With the fingers, the dam is lifted away from the cavity and the point of the needle pressed firmly into the tooth just above the upper border of the cavity. The needle should point downwards with the shellacked bead pointing towards the nose and near the gums or lip. That part of the dam which lies on the lip is then lifted and slightly stretched, not so much however as to loosen it from the tooth, but enough to let it hold to the shellac bead. This is shown by Fig. 2.

Dr. Brockway says "it may wriggle about but it will not slip." But he holds it important that the point of the needle be well and firmly pressed into the tooth above the border of the cavity.

## A HINT.

BY CHARLES P. CHUPEIN.

We are aware that rubber for separating the teeth is little used on account of its great activity and of its disposition to work its way towards the neck of the tooth, thereby pressing on the gum and causing considerable pain. Yet rubber is made into special forms and used for this purpose still. This style of rubber often gets quite stiff, hard and rotten, making it, when wanted, unfit for use. Rubber dam is always at hand, is always fresh and always ready for use. If a piece of this be *twisted into a roll between the thumb and fingers* it can be made into any size necessary for the case in hand, and being thus made cylindrical, is in the best form for application. Three, four, five or a dozen turns can be made of a small discarded piece of an inch square to place between the teeth to effect their separation.

[TWENTY-FIRST PAPER.]

## LEADING QUESTIONS AND ANSWERS FOR DENTAL STUDENTS.

BY THEODORE F. CHUPEIN, D. D. S., Philadelphia.

Q. How deep would you drill a retaining pit?

A. The one thirty-second of an inch would be sufficiently deep.

Q. With what instruments would you start these pits?

A. With a small spear-point drill in the dental engine.

Q. Is this all that is necessary?

A. No. The spear-point drill would leave the retaining pit very nearly conical; the spear-point drill should therefore be followed by a "spade" drill, or a "flat square point" drill, so as to obliterate the conical form, and so leave the pit of a shape to retain securely the gold that is packed into it.

Q. Where should these pits be drilled?

A. In the dentine, and in a direction from the pulp.

Q. How many of these pits are requisite?

A. One, in connection with groves or undercuts, will in some cases be sufficient, while in other cavities two or three will be required.

Q. After the retaining pit or pits are prepared, what is the next procedure?

A. They are filled with gold and gold added piece by piece until the cavity is thoroughly filled.

Q. How should the pits be filled?

A. Small pieces of cohesive gold that are *not annealed* should be placed into them and they should be *thoroughly* packed, with small points.

Q. Why would you use these very small pieces at first, and not annealed?

A. Because if large pieces be used the gold will choke at the orifice of the pit, and though it may *appear* solid, the solidity will only be at the mouth of the pit, and not within it, and when the filling will have proceeded two-thirds, or nearly to completion, it will rock and have to be done all over. It is therefore important to start right and be sure that the pit or pits are solidly filled. With regard to *not* annealing the gold that is put in the pits, we would say that although annealing *should* soften all metals, it has been observed that gold assumes a slight rigidity when annealed, and is disposed to ball. For this reason we think that it is preferable to fill the pits with *cohesive*, but not *annealed cohesive* gold.

Q. You have told me how you would apply the rubber dam, is there nothing else you would do after applying it?

A. Yes, for the comfort of the patient, I would place over the chin of all lady patients, aud such gentleman patients who wear no beard on their chins, a small napkin beneath the rubber dam, and keep this in place by means of two small clamps which would hold it to the dam. Besides this, if I had used a clamp to aid me in applying the dam, and the tooth to which the clamp was applied was of such a shape as to permit the removal of the clamp, I would take the clamp off, and secure the dam from slipping by tying a larger knot in the ligature. I would let this knot rest on the lingual part of the tooth, and with this feel secure that it would not come off in the midst of the operation.

Q. Why would you do this?

A. Because when the clamp is on the tooth, the patient is unable to entirely close the mouth, and unless the mouth is entirely closed, the patient cannot swallow the saliva that accumulates, and thus it runs out of the mouth and over the clothing, not only being very disagreeable, but adding much to the discomfort of the patient.

Q. But would you recommend the patient to swallow the saliva?

A. Why not? saliva is secreted to be swallowed, not to be spit out. No other animal but man spits out the saliva.

Q. But are there not means to withdraw the saliva when it accumulates to the discomfort of the patient?

A. Yes. There are the saliva pump and saliva ejector by means of which the accumulation of saliva may be entirely withdrawn from the mouth while the operation of filling proceeds.

Q. Is there any objection to the use of these?

A. Some very fastidious patients object to having the pipe (although made of glass and thus made entirely clean) that has been used for another patient put into their mouths.

Q. Could you not use any means of preventing the saliva oozing from the mouth and soiling the clothing?

A. The best means we have found to this end is the removal of the clamp and securing the rubber by means of the rubber ligature. Besides this, if a square yard of thin or medium rubber-dam be placed in front of the patient, and over this a towel, the clothing may be kept perfectly clean.

Q. What is a further necessity before beginning the filling?

A. The cavity must be absolutely dry and all decay removed before the filling is begun.

Q. What is used for this purpose?

A. Absorbent cotton, spunk and Japanese bibulous paper,

Q. After the cavity is made dry is the filling then begun?

A. Some operators do; but it has been strongly recommended to sterilize all cavities before commencing the filling by wiping them out with carbolic acid, and then removing all of this with the absorbents we have mentioned. Other operators recommend the lining of cavities with some resinous gum before the filling is introduced.

Q. What gums are used for this purpose?

A. Gum sandrac dissolved in alcohol, Canada balsam dissolved in chloroform, and others have suggested the scraping of amber in chloroform, which dissolves it, and when the solvent evaporates leaving a very hard lining to the cavity.

Q. You mentioned that before you begun to fill the cavity you would remove *all* the decay. Is this the invariable rule?

A. It is the invariable rule to remove all decay from the *borders* or *margins*, at the orifice of the cavity; but when the decay has proceeded to such an extent that to remove all decay from all parts of the cavity the nerve would be exposed, then it is recommended to let some of this decayed dentine remain.

Q. What reason is given for this?

A. Such a procedure is based on the reason that the layer of dentine, though disorganized, affords a better protection to the pulp than any capping or filling that may be inserted over a pulp that would be exposed by the removal of *all* the decay.

Q. Suppose in forming a cavity of this kind the operator would notice an absence of pain evinced by the patient, would it be proper to proceed with the filling?

A. It would not, for the absence of pain would indicate the death of the nerve, and if the filling would be introduced under such circumstances severe pain would be a subsequent result.

Q. Why?

A. Because to insert a filling in such a cavity would be like screwing down the lid of a coffin on the dead man within, and the subsequent putrifaction of the pulp enclosed within such a tooth would result in alveolar abscess, and all the terrible pain consequent on this disease.

Q. Suppose in preparing a cavity, that in removing the decay you would expose the nerve, would you cap the exposure or devitalize?

A. My procedure would be governed by circumstances. If my patient was of a strong, hearty, healthy, well organized constitution, I would be tempted to cap the exposed pulp. But if the teeth were soft, highly organized, or the patient of a weakly constitution, I would proceed to devitalize at once.

Q. What would you use for this purpose?

A. I would mix about as much arsenic as would lie on the small blade of a penknife, with a similar amount of finely powdered cocaine. I would make this into a paste with creosote, corbolic acid or oil of cinnamon, and place this in contact with the pulp, and then seal it up with adhesive wax or temporary gutta-percha stopping.

Q. How long would you permit this to remain in contact?

A. Opinions vary in this, but from two to six days or a week has not appeared too long.

Q. Suppose when the patient returns for you to remove the dead pulp you should find still considerable pain in the pulp, to which you had made the application, what would you do.

A. I should proceed to mummify or harden the devitalized pulp, by using chloride of zinc tannin, glycerine and alcohol to it. I would mix up a crystal of chloride of zinc with a drop of alcohol on a glass slab, and I would dissolve as much powdered tannin as would lie on the small blade of a pen-knife, with a drop of glycerine on the same, then I would combine these two solutions, and take them up in the fibres of some cotton, and place this into the pulp chamber, seal it up and let it go for another week.

[TO BE CONTINUED.]

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The next annual meeting will be held at Eagle's Mere, Pennsylvania, July 9, 1895.

Howard E. Roberts, Corresponding Secretary,
1321 Walnut Street, Philadelphia.

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Dr. Maye says he does not believe in working amalgam as dry as some advocate. He wants it plastic enough to pack well, and likes to have it packed before crystallization has far advanced.

## SELECTED ARTICLES.

# THE DENTAL PULP, ABSCESSES, AND ROOT FILLING.

CHARLES KEYS, D D.S., RIO DE JANEIRO, BRAZIL.

To destroy the dental pulp painlessly, take a disk made of No. 60 tin foil, and cut to the size of bottom of cavity into which is to go, and depress between end of excavator handle and a piece of soft wood, or rubber pad. Fill with campho-phenique, into which is placed sufficient aristol to make a syrupy mass; to this add two or three crystals of cocain hydrochlorate, and in the center of this little disk of paste put about a one-hundredth part of a grain of pure arsenic. Dry the cavity (after having previously cleaned out and washed with warm water) and invert the disk and contents over the exposure and fill over with temporary stopping, being careful to avoid pressure sufficient to flatten the disk on the pulp.

Since the latter part of 1889 I have used almost exclusively this method, and I cannot record a single case which gave pain, unless inflammation existed in the pulp previously to the application.

For allaying inflammation in the pulp, extending to suppuration, with or without pain, I have found nothing more effective than thymol, which is applied pulverized in a tin disk inverted over exposure, and cavity filled with temporary stopping, having previously cleaned the cavity and washed with warm water. If pain be very severe, a drop of chloroform placed in the cavity, after the disk with thymol is adjusted, and previous to putting in temporary stopping, will usually lessen pain; otherwise thymol generally requires from ten to fifteen minutes to produce effect. In slight cases one application is usually sufficient, but in severe ones sometimes several are necessary before arsenic may be applied.

To avoid pericenentitis, abscesses, etc., in the removal of putrescent pulps, exclude absolutely the entrance of saliva, use clean instruments, flood cavity with some good antiseptic, and at first sitting remove all of the pulp possible without letting any of the matter or the end of the broach pass beyond the apex. The patient should be told to give notice on first sign of sensation, as the main point is to avoid, under all circumstances, the passage of anything into the tissues beyond the end of the root. This done, follow with loose dressing of campho-phenique containing about ten per cent of aristol. If a second dressing be necessary, use oil of cassia with aristol in same proportions as above. Vapors of the former are less likely to produce irritation than those of the latter. In using peroxid of hydrogen, pyrozone, or natrium and kalium, care must be taken to keep the entrance to canals from clogging, else the gases set free may pass the other way and carry with them matter beyond the apex, which must be avoided.

To treat abscess without fistula ("blind abscess"): After the canals have been thoroughly freed from septic matter, pump into the abscess campho-phenique, with ten per cent aristol, till the patient can feel it, leaving very loose dressing in the root with only sufficient cotton to keep out food (pure aristol incorporated into cotton anywhere exposed in the mouth will keep it "sweet" much longer). Subsequent treatment consists in keeping the canal clean and aseptic, with loose dressings, till no more pus can be found in the canal. Much trouble is frequently caused by over treatment.

If hydrogen peroxide be used to clean out the canal and abscess, care must be taken not to allow the apex to become clogged.

For filling root canals. Take of oxid of zinc and aristol equal parts, and oil of cassia and vaselin enough to make a soft, putty-like paste. After the canal or canals are thoroughly dried, fill the pulp-chamber with this paste, and, with a hot instrument, or nerve broach with a wisp of cotton wrapped around it, work into place. After the canal is filled with this mass, a gutta-percha cone, the size to fit the case, is pressed into the canal, the surplus being removed with a hot instrument. The balance of the pulp cavity is filled with cement.

I have used this paste alone in filling roots of temporary teeth, and subsequently, after roots were absorbed, extracted them and found the paste, though much harder and tougher, perfectly intact, and protruding a little, somewhat like crab's eyes. In no instance have I found any irritation caused by this paste, which I have used constantly for over three years.—*International.*

## HOW TO GET CLEAN JOINTS.

BY CHAS. SUTTON, COATICOOK, QUE.

I have often read statements in the journals that the way to get clean joints is to grind closely, or to insert plaster, cement, etc., between the joints. Yet in spite of instructions, joints do come out with those reproachful dark lines which offend the eye. I do not pretend that I have made an original discovery, but I worked out the matter for myself, and I never have a dark joint, and this is the way I avoid it:

1. I never let wax get between the joints in preparing the set for the flask. I never melt the wax before or behind, where the blocks meet.

2. One of the last things I do when the case is waxed up, is to remove each block, one at a time, rub the joints on a piece of fine and clean sandpaper and replace them, taking care never to melt the wax where the blocks meet.

3. I then flask the set as usual, and when opening it, I avoid heating it so much that the wax will melt and run into the clean joints. I then *pick out* all the wax possible, especially in the vicinity where the blocks meet.

4. Now comes the secret. If you have not melted the wax into the joints before flasking, or when heating it to separate the flask, you have now perfectly clean joints. But you have to pour hot water into the case to melt out wax you cannot pick out, and when you do that, you just run the melted wax into those joints, and even if you boil for an hour, and pour gallons of boiling water into the case, you can never cleanse them of foreign matter which not even boiling water will remove.

Now after you have picked out all the wax possible, just run into the joints thin plaster of Paris, and wait till it hardens. *Then* you may pour on your boiling water to remove the vestige of the wax ; but neither the wax nor the water can get between the joints, and neither can the rubber. It is not the rubber that dirties the joints. It is the wax, and the foreign matter in the wax which you run into them when you think you are running it out.

## METHOD OF INDUCING LOCAL ANÆSTHESIA BY COCAINE.

By D. Caracatsanis, M.D., Athens, Greece.

[Read before the World's Columbian Dental Congress, Chicago, August, 1893.]

You are all acquainted with the danger of cocaine injections for the painless extraction of teeth. Its narcotic effects are surprising, but unhappily they are frequently followed by untoward consequences ; even loss of life has occasionally resulted. At the Dental Congress in Paris animated discussions arose on this subject. Since then I undertook some experiments to determine whether some procedure might not be substituted for injection—some milder method for the induction of local anæsthesia by means of cocaine.

I proceeded on the basis that if its effects could be completely localized, cocaine would answer perfectly. Such a method I have found ; I have applied it practically for several years. The patients have nothing to complain of, not even the slightest indisposition. Accordingly it is with the greatest confidence in my method that I lay it before you. The operation is simple, within the power of every one; its only imperfection is that its application demands considerable time; sometimes as much as three-quarters of an hour is required for complete anæsthesia. The procedure is as follows: I begin painting the gum, next the tooth to be extracted, with a steel instrument wrapped in cotton dipped in a solution of phenic acid, 2 to 1000, which I have heated. This is followed by the application of the salt of cocaine by means of a pledget of cotton impregnated therewith. As soon as the gum shows signs of insensibility, I commence to separate it slowly from the tooth by means of a bistoury. I insert into the space thus effected pledgets of cotton impregnated with cocaine as before. As the anæsthesia advances, I enlarge the opening to a depth of about one centimetre, on the buccal as well as on the lingual surface. I direct the patient to abstain from swallowing the saliva, to avoid all absorption of cocaine. I take good care not to forget the cotton pledgets placed between the gum and the tooth.

After assuring myself by strongly making pressure on the parts with a steel instrument, I have my assistant to spray the parts with a mixture composed as follows:

| | |
|---|---|
| Chloroform | 25 grammes. |
| Sulphuric ether | 40 grammes. |
| Menthol | 3 grammes. |
| Cocaine | 1 gramme. |
| Essence of mint | 1 gramme. |

I extract while the parts are being sprayed. The resulting anæsthesia is absolutely complete; the only condition in which I have failed to produce it being the existence of inflammation of periostitis.

To convince you thoroughly, I am prepared to make the experiment with my method before your honorable Congress.—*Pacific Coast Dentist.*

## TRANSLATIONS.

BY CARL E. KLOTZ, ST. CATHARINES.

[From Foreign Dental Journals, etc., etc.]

NITROUS OXIDE WITH A SMALL PERCENTAGE OF OXYGEN ADDED.—In a splendid work on anæsthetics and their administration Dr. Hewitt says: "Generally the admixture of oxygen with nitrous oxide for anæsthetic purposes is not permissible, and the narcosis obtained by the nitrous oxide alone is in most cases sufficient." By experiment and observation in the last few years it has been found that, in a number of cases, better results have been obtained by adding a small percentage of oxygen to the nitrous oxide. Many operators will look with disfavor on this practice. I will therefore give you a table of comparisons between the two methods, the one giving results and effects under anæthesia with pure nitrous oxide, and the other with the mixture:

| *Pure Nitrous Oxide.* | *Nitrous Oxide mixed with a small percentage of oxygen.* |
|---|---|
| 1. Requires a simple apparatus and little practice and experience. | 1. By using the mixture you require a complicated apparatus, and a great deal of practice in using it. |
| 2. Patient quickly under the influence. | 2. Patient not so quickly under the influence. |
| 3. Face becomes pale and slightly bluish in color. | 3. Face undergoes very little or no change of color. |
| 4. Respiration labored and irregular, mostly snoring and stertorous. | 4. Respiration quiet and regular, slight snoring sometimes, but never stertorous. |
| 5. Generally twitching of the muscles. | 5. No twitching of the muscles noticeable. |
| 6. Pulse frequently faster, but when fully under the influence of the gas it gets slower. | 6. Pulse always normal. |
| 7. Under complete narcosis generally dilatation of the pupils. | 7. Only slight dilatation of the pupils. |
| 8. Dysphagia and swelling of the tongue and upper air passages. | 8. Only slight swelling. |
| 9. Average time to put patient under the influence of the gas is about 51 seconds. | 9. Average time required is about 110 seconds. |
| 10. Average time of anæsthesia after mouthpiece is taken from the mouth, 30 seconds. | 10. Average time of anæsthesia is 44 seconds. |
| 11. Average quantity required for anæsthesia is about 6 gallons. | 11. Average quantity required from 8 to 10 gallons. |
| 12. Bad after-effects (headache, dizziness, nausea or vomiting) are seldom experienced. | 12. Bad after-effects are a little more frequent. |
| 13. Exciting and sometimes horrible dreams are experienced by the patient. | 13. Dreams are seldom excitable, and very often of a pleasant nature. |

It will be seen by the above table that the symptoms of asphyxia, through the addition of oxygen to the nitrous oxide during inhalation, have been thwarted; its use as an anæsthetic is consequently in many cases less dangerous.

The combination of oxygen and nitrous oxide appears to be principally applicable in the following cases:

1. To narcotize children, in whom you expect a disturbing twitching of the muscles when giving nitrous oxide alone.

2. For anemic and weakly patients, who, like children, frequently

have a tendency to contraction of the muscles, and remain but a very short time under the influence of pure nitrous oxide.

3. For all persons who show a remarkable susceptibility for nitrous oxide *per se.* Such patients are frequently difficult to manage, as the anæsthetic effect is of a very short duration.

4. For such patients who have had unpleasant sensations during the inhalation of nitrous oxide.

5. For aged persons.

6. For patients whose tonsils are unusually large.

7. For patients with heart or lung troubles.

—*Correspondenz Blatt fur Zahuarzte.*

## PRACTICAL POINTS.

Our work is of such a character that its success depends largely upon the way in which it is done, and the so-called little points are in reality the fulcrums of our power. I have not deemed it best to describe indetail, but to simply mention the means employed. We are constantly using methods known, it may be only to ourselves and value of which we do not consider, while if they were known to the others they might prove the one thing lacking to success in special cases.

Pink gutta percha is to be found in every well-appointed dental office, is probably used for more purposes than any other material in our possession. A few are here mentioned: As temporary fillings in cavities already prepared, when want of time or other cause prevents the insertion of a permanent filling; as temporary filling in large cavities not prepared, to prevent nerve exposure until such time as patient or operator may find time to devote to permanent filling; as a wedge between teeth separated by cotton, rubber or other means to allow inflammation to subside and retain space during the operation of permanent filling; as a wedge between teeth having large spaces from extraction or otherwise standing next to the one being filled, to distribute the force of the mallet blow, and thus securing to the patient the greatest possible comfort; (as a rest under the arm of the Perry separator to secure the instrument from rocking slipping, etc.,) as a separator and rest for the jaws during operations; as cones to force chloro-percha into every portion of the nerve chamber. It may also be used to make small handles for the broach, thus securing a better hold and more perfect manipulation of the broach during nerve extraction, especially when the approach is from the distal surface; also wound around the ends of ribbon saw and making a secure handle for this instrument; also for separating teeth, held on the end of an instrument and heated to determine the life or death of the dental pulp or nerve.

Used as a chloro-percha to fill root canals and making the most perfect filling for this purpose (universally used) which has yet been brought to our notice; to repair the break in the rubber dam; to secure remedies, within cavities, when mixed with cotton. We injure our hand or fingers, and at such times, if we immediately suck the wound and wash with bichloride mercury solution 1-1000, thoroughly dry and smear over with chloro-percha, all danger from infection is removed, and the wound will immediately heal. For filling some of the molars when it is impossible to apply the dam, a band of German silver or other metal secured on the inside with chloro-percha and then forced over the tooth will prevent the moisture from interfering with the work; it is also an excellent article to flow over the inside of a cavity when the nerve is nearly exposed and when it is desired to cap with cement.

Amalgam: To repair a break in a tooth next a gold filling on the lingual surface, also to repair when decay has attacked the tooth at the cervix beneath the filling. In the first place take a little scrap of amalgam already mixed and which has crystalized, then heat a spatula quite hot and press the amalgam into place; as it immediately becomes hard no danger is feared for immediate dislodgment. This is especially used in those cases when it would loosen the gold filling if much cutting were done. In the second case, after thoroughly preparing the cavity, fill as in ordinary cases, and in many cases decay will be retarded for years. I have seen cases of nine years' standing. This is one of our condemned ideas of twenty years ago. So our idols are broken.

Fillings at the lingual cervix and in the lingual pit and groove of the lateral insisors: Take a piece of tin or other metal 1-3 inch wide and long enough to surround the tooth to be filled, fasten the end with thread or other means, pass over the tooth, allowing the metal to slide over the cavity between the gum and the tooth and with a burnisher crowd down and bend over the edge as much as possible. This will expose the cavity to view and crowd the gum from the tooth thus allowing of freedom during the operation and it will also prevent moisture getting into the cavity. A thin coating of chloro-percha applied with a nerve broach will greatly assist in some cases. This method is a useful one in filling cavities on the distal surface of third molars where the gum has grown over the distal ridge.

Extracting Nerves: It frequently happens that the nerves in the lingual root of superior molars and the distal root of inferior molars are difficult to extract. I have been using two or three broaches in a bunch for such cases with good results. Have we a prescribed procedure for filling nerve canals?

After the arsenious acid paste has been in the tooth for three days, I remove the capping and drill into the pulp chamber, and after removing the pulp, or so much of it as I can, apply oil of cassia on a pledget of cotton and dismiss my patient for a day, then after dressing with peroxide hydrogen, I use oil of cassia and dry out with very hot air and immediately fill. I claim to have good success by this method.

THE USE OF THE SEPARATOR IN FILLING TEETH: It saves the time of all concerned, and if judiciously used is a boon to our patients. With it, there are few cases which cannot be separated enough for immediate filling. After the cavities are filled, a little more space may be gained so that natural contour is preserved and food is not crowded into the V-shaped spaces, to the great in convenience of the patient, and very likely to re-decay at an early day.

SANDPAPER DISCS, if coated with soap instead of sweet oil or glycerine, will not heat the tooth so quickly as when nothing is used, and gives a more polished surface to the filling.

THE APPLICATION OF THE RUBBER DAM: I have never been able to understand how anything is gained by using small pieces of rubber dam. It should be large enough to well cover the mouth, cheeks and chin, so that it may be held and kept out of the way during operations. Many breaks about the necks of the teeth after the dam has been applied is due to punching the holes too near together; punch them far enough apart so that the rubber will not be stretched in the interdental spaces and be sure to punch holes enough. The ligating is easily done by allowing the thread to extend from tooth to tooth on the lingual side without a single knot. Black carpet thread makes a good ligature and its color makes it possible to detect any fibers which may have caught on the cervical border of a cavity, especially in deep cavities, splitting the thread and using two strands for teeth closely wedged.—BARNES (H.), *Ohio Dental Journal.*

DON'T leave the cover off your vulcanizer when not in use.

Don't mix plaster to pour into a flask or impression cup, and when partially full mix a little salt or potassium with the remainder in the bowl, to make it set; this will spoil all. Put it in just before commencing to pour.—*Dominion Journal.*

## BOOK NOTICES.

Dental Medicine: A Manual of Dental Materia Medica and Therapeutics. By Ferdinand I. S. Gorgas, A.M., M.D., D.D.S., Editor "Harris' Principles and Practice of Dentistry and Harris' Dictionary of Medical Terminology and Dental Surgery," Professor of the Principles of Dental Science, Dental Surgery, etc., in the University of Maryland, Baltimore. Fifth edition; revised and enlarged. Philadelphia: P. Blakiston Son & Co., No. 1012 Walnut street. 1895.

This is perhaps one of the most popular and valuable of the text-books employed at the various dental colleges throughout the country. This is borne out by the fact that the large *fourth edition* was issued in 1891, when the demand for the new *fifth edition*, which is now before us, is again ready for delivery to the dental student and practitioner. Each edition contains valuable additions to the last, rendering the work eagerly sought after. The strides of dentistry, year by year, is so marked that the editor must keep himself always on the *qui vive*, to be up with the times or to "catch the first worm." The present volume contains the following additions: Sodium-Peroxide, Pental, Europhen, Aseptol, Glycozone, Coryl, Chloride of Ethel, Tropacocaine, Kalium-Natrium, Trikresol, Loretin, Phenosalyl, Formalin, Diaphtherin, Boricin, Dermatol, Strophanthus, Vaselone, Camphoid, Gaultheria, Catecher, Carbolate of Camphor, Carbolate of Cocaine, Benzol-pseudo-tropein, Oxyquinaseptol, Sulphophenol, Meno-chlor-ethene, Tri-methyl-ethylene, Di-iodoform, Carbolized Cosmoline, Eugenol-acetamid, Electrozone, etc., etc.—Ed.

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Descriptive Anatomy of the Human Teeth. Third edition. By G. V. Black, M.D., D.D.S., Sc.D. Published by The Wilmington Dental Manufacturing Company, 1413 Filbert street, Philadelphia, Pa.

We noticed this valuable work on its first appearance, but find but few changes in this the third edition. That a third edition has been issued in so comparatively short a time is the best evidence of the value and appreciation of the volume.—Ed.

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Manual of Operative Technics: A Practical Treatise on the Elements of Operative Dentistry. By Thomas E. Weeks, D. D. S., Professor of Operative Dentistry and Dental Anatomy in the College of Dentistry, Department of Medicine, University of Minnesota. Published by H. D. Justi & Son, Chicago, Illinois, U. S. A. Copyrighted, 1894.

We have received from the publishers a copy of this excellent book, so admirably adapted to the technic and study of operative dentistry.

Dr. Weeks has shown himself a master in the art of imparting information, and has exhibited not only a minute personal knowledge of the subject, but the immense labor he has gone to in the preparation of the work evincing a zeal and earnestness which will make the student truly indebted to him. The manner in which he carries the student up each round of the ladder of study, and the explicit way in which he advises and tells them what to do to become proficient, shows how much thought, labor and practice he has had in his department. The book should be in the hands of every student of dentistry, and may profitably be read and studied by graduated practitioners, to brighten up points that are or have been obscure to them.—Ed.

A Compend of Dental Prosthesis and Metallurgy. By George W. Warren, D. D. S., chief of the clinical staff, Pennsylvania College of Dental Surgery, Philadelphia; author of "A Compend of Dental Pathology and Dental Medicine;" editor of "Richardson's Mechanical Dentistry," etc., etc. With one hundred and twenty-nine illustrations. Philadelphia: P. Blakiston, Son & Co., 1012 Walnut Street, 1894. Cloth $1.50.

Dr. Warren's attractive and useful little book is befor us, which we read with much pleasure, It contains so much valuable information, and so briefly and forcibly told that we bespeak for it a large sale and an extensive reading among the students for whom it is compiled and written. So many books of this kind, but of larger dimensions, are in the hands of students, that they may well have one of this size, where the cardinal points are treated, leaving the farther elaboration to the larger editions, that this one may be regarded as a "multum in parvo."—Ed.

Transactions of The World's Columbian Dental Congress, in two large volumes. Edited for the General Executive Committee by A. W. Harlan, A.M., M.D., D.D.S., assisted by Louis Ottofy, D.D.S.

"The work is well gotten up, illustrated and well printed with clear readable type and on good paper. It contains many valuable papers and the entire transactions, to the minutest details, of the Congress are contained within its covers. It is a most valuable output of one of the most celebrated dental meetings that has ever been held.—Ed.

The Dental Digest.—This is the title of the new dental journal published under the editorial management of Dr. A. W. Hailand. Its first issue appeared in January, and it is said to be the organ of the

American Dental Protective Association, and of its adjuncts the Dental Protective Supply Company, of which Dr. I. N. Crouse of Chicago is the leading spirit and energetic president and manager. The first number is well supplied with good articles, and there is a wide field for usefulness opened to the publication. We welcome our contemporary and wish it every success.—ED.

### MEMORANDA RELATING TO THE DISCOVER OF ANÆSTHESIA.

"We have received the above Memoranda, together with a letter, from Dr. William J. Morton making the request that we "reprint such portions of it as may be of interest to our readers." We have perused it and find no item of interest in it to our readers and consequently only acknowledge its reception.—ED.

### PAMPHLETS RECEIVED.

"Cavity and Filling Nomenclature," by F. E. Howard, D. D. S., M. D. S. The pamphlet contains cuts and delineations indicating the position of fillings, and so well, briefly and properly named, that any dentist mentioning in a paper or in his remarks where the filling was inserted, conveys to his readers or listeners a perfect picture of his work. Thus "a palato gingival filling," "a palatine filling," "a mesio-palatine filling," "a mesio-compound contour filling," "a disto compound contour filling," "an incisive filling," "a subco-coronal filling," "a mesio bucco-coronal filling," "a mesio coronal filling," "a palato-coronal fissure filling," "an anterior coronal filling," "a disto coronal filling," "a disto-palato-coronal filling," "a central coronal depression filling," "a bucco-gingival filling," "a disto bucco-cervical filling," "a buccal filling," etc., etc.

PROCEEDINGS of the National Association of Dental Faculties. Eleventh Annual Meeting, held at Old Point Comfort, Va., August 4, 6 and 7, 1894.

Proceedings of the Tenth and Eleventh Annual Sessions of the National Association of Dental examiners.

THE Effect of Exercise upon the Teeth. By A. Huch Hepple, L. D. S., D. D. S., Omaha.

THE Second Annual Announcement of the Tacoma College of Dental Surgery.

To GIVE aluminum a high finish, make a bath of strong alkali. "Use commercial concentrated lye."—J. HARVIN POLLOCK, New York.

# THE PRACTICAL PLACE.

## ANOTHER USE FOR TRICHLORACETIC ACID.

I cannot report further on trichloracetic acid as I had hoped to do, except to say that I had more than fair success in its use for obtunding hypersensitiveness at the necks of teeth, principally the incisors; usually the second application of the 10 per cent. solution is sufficient. The only failure I have to record is in a case where the acid reaction of the mouth was very strong. This fact I overlooked, and applied the trichloracetic acid. Next day the lady returned, saying the pain was much worse, and simply unbearable. An alkali was at once suggested, and the only thing at hand was what is called Robinson's remedy, which I applied. In four days the lady reported the sensitiveness gone and comfort restored. She can now brush her teeth about the labiocervical margins, something she has not been able to do in two years.

This is a hint to the "hobbyist," for it proves that we cannot rely on one remedy in all cases.

I am specially pleased to report, so far as my experience goes, that we have in trichloracetic acid an unequalled remedy for aphthous stomatitis or canker sore mouth. These mucous patches are often quite painful, and annoying to both patient and operator. Ordinarily, one or two applications will be sufficient. In extensive cases, patients may be given a small bottle and apply it for themselves. It seems to me that we can do the medical profession no better service than to call their attention to this remedy as a "specific" in this class of lesions. One application is sufficient to stop further progress, if used on first appearance of the lesion. I say this with considerable confidence, because I have succeeded where the physician has failed.

J. AUSTIN DUNN, Chicago, Ill., in *Cosmos.*

## MOUNTING DISCS AND POINTS.

The best way to mount discs and points for the dental engine is with phosphate cement. Mix this thin or to a creamy consistency. Drop a small quantity in the hole of the disc or point, and daub a little on the end of the mandrel. Place the mandrel point in the hole of the disc, and make it true by putting the shank of the mandrel through the "disc setter." Let this remain until the cement gets perfectly hard, and you will find that the disc or point will never separate, which cannot be said of mounting these with gum shellac, as is generally done.—T. F. CHUPEIN.

## BLEACHING WITH PYROZONE.

AT THE recent joint meeting of the Maryland State and Washington City Dental Societies, Dr. C. A. Meeker, of Newark, N. J., successfully bleached a deeply discolored left superior central incisor in thirty minutes. His method, after carefully adjusting the rubber-dam, is to wipe out the prepared cavity with ammonia, this is to neutralize possible acidity; then with a gold probe, armed with a swab of bibulous paper saturated with pyrozone, 25 per cent, he liberally moistens the interior of the cavity and exterior surface of the tooth, evaporating the solution by repeated blasts of cold air. This method is continued till the tooth shines out again in its original color. The doctor is highly elated over his success with pyrozone as a bleaching agent, and speaks encouragingly of the stability of its results. D. E. Wilber, D. D. S., Nat. University, Washington, D. C., in *Items of Interest.*

## To Re-swage a Metal Plate Having Teeth On.

The adage, "Necessity is the mother of invention," proved itself true in my practice recently, and as some professional brother may find himself similarly situated, I give the *Journal* the benefit of my experience.

I made a gold plate for a patient. It carried one central incisor and the bicuspids and molars. It seemed to come out of the investment beautifully, but when I went to fit it in, I found it raised up from the palate badly. I determined to try an experiment. I placed the plate upon the die, removed it and marked the die around, about where the palatal side of the artificial teeth would stand. I then cut away the metal where any of the teeth would be likely to touch the die. I then built up a ring of putty outside of where I had marked the die. I ran a lead counter in my putty ring. I replaced the plate upon the die and formed the counter to fit the palate without touching the teeth. A few blows with a hammer upon the lead, while an assistant held the plate firmly on the die, brought it into very good shape.

Another case:—A gentleman who wore, for some months, a well-fitting gold plate, carrying a lateral incisor and some teeth on each side, returned with it so flattened that the palate would not touch the roof of his mouth. I applied the same treatment which, he said, made it fit better than it ever did before.—R. E. Sparks, D.D.S., Kingston, Ont.

To get a tin model on which to vulcanize a plaster cast, free from imperfections or blisters, carefully dry cast and dip into melted stearine. When hardened, a sand mold from this model is made in the usual way, into which tin is poured, and when slightly congealed at the edges, the still fluid portion of the tin is poured back into the melting ladle. A thin shell of the tin will be left as a lining to the sand matrix. This shell furnishes a perfect model after the hollow interior is filled with plaster. If the pouring back is delayed too long, the thin shell will be too thick, but the right moment for repouring will be easily seen by a little experience. Before the plaster of Paris is poured into the tin shell, the latter is to be cut at different places with a very thin saw from the outer margin toward the alveolar ridge. These tin incisions will permit the removal of the tin shell after vulcanizing, by bending the sections of tin to the inside, so that the plate may be easily separated from the model. Plates so vulcanized need no further polishing on the palatine surface.—*Zahn'echnische Reform.*

### A POTATO RETORT.

A MINER in Australia who was obtaining fine gold by sluicing, was asked how he saved it. He replied that he employed the common amalgamation process, but used a novel and ingenious retort for the purpose. After amalgameting with quick silver, "I get a potato," said the miner, "cut off one end, and scoop out a cavity in it large enough to take my ball of amalgam. I next take a spade or piece of flat iron, and place the potato with the cut side down. As the amalgam gets hot the 'silver' evaporates and goes all through the potato; but it can't get through the skin. When it is cool, I have my gold button on the spade and my 'silver' all in fine globules in the potato. I break that potato up under water and I have all my 'silver.' "—*Philadelphia Ledger.*

### ELECTROLYSIS TO OBTUND SENSITIVE DENTINE.

Apply the rubber dam. To a 12 per cent. solution hydrochloral cocain, add equal quantity absolute alcohol. With this, moisten a pledget of cotton and place in the cavity. Press on it the point of the positive pole, and press the negative with a wet sponge on the cheek. A mild current applied twice for three minutes, with an interval of three minutes, will usually permit painless excavation.—F. MCGRAW.

### TREATMENT OF TEETH WITH DEVITALIZED PULPS.

Dr. Glesch, of Zomber, Hungary. After the pulp has been devitalized and rubbed down in position, the pulp is removed out of the pulp chamber and partly out of the canals with spoon-shaped excavators. An antiseptic is applied to the cavity. When the cavity is dried he takes a pellet of cotton moistened with distilled water and dips it into powdered borax. The borax, adhering to the cotton, is placed into the pulp chamber and part of it worked into the canals till it touches the nerve stump. The remaining borax is wiped out of the cavity. Being moist, the borax will permeate the remaining nerve fibres left in the canals, which it would not do if applied in a dry state. The borax in the canals is covered with tin foil, also the pulp-chamber is filled with it. The cavity is filled with any desired filling material—gold, amalgam, etc.—*Zahnarztliches Wochenblatt.*

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### Cleaning the Teeth.

A two per cent aqueous solution of trichloracetic acid to moisten the pumice is perfectly harmless. I have used it in my practice for some time, and find it far superior to tincture iodin for removing the "green stain" on children's teeth.—W. H. Jones, D.D.S., Fultonville, N. Y.

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When a glass stopper sticks in a bottle, pass a strip of woolen cloth around the neck of the vessel and see saw it backward and forward. This friction causes the neck to expand, so that the stopper becomes loose. On this principle of expansion by heat a tight screw may be drawn from a metal socket with a cloth dipped in boiling water.—*Scientific American.*

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Often, after a black rubber plate is polished, it presents a very inferior color, a grayish black. This may be removed by the application of carbon bisulfid. Dampen a cloth with the solution and rub the plate vigorously wherever required. It is well to wash the plate thoroughly after the use of this solution, as there might otherwise be a tendency to nausea.—S. Burns

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### Extensive Contour Fillings Made in the Laboratory.

The cornor of a central incisor, broken off by a blow, from the gingival margin of the mesial surface diagonally across to the angle of the distal surface, was restored by a gold filling made in the laboratory as follows (pulp alive, but nearly exposed, and patient insisting upon a gold filling): Beveled the margins of fracture accurately; burnished a thin piece of platinum plate to the surface, pierced with three small holes, through which platinum pins were passed at parallel angles. Over this plate, contour was restored with wax, over which platinum was burnished, using a warm burnisher, to cause the platinum to adhere to the wax. The whole was then removed and invested, leaving the mesial margin exposed. The wax was burned out and the pocket filled with 22k. gold solder. The investment was removed, the piece finished up and adjusted, and the entire operation completed in little more than an hour.—S. W. FOSTER, Decatur, Ala.

DR. GEO. EVANS uses gutta-percha and oxyphosphate combined, as a setting material, so as to allow collar crowns with posts to be easily removed by application of heat, which is a great advantage in bridge work.

### TO CLEAN STEEL INSTRUMENTS TO MAKE THEM APPEAR AS NEW.

Wash well with wood ashes and water to remove all grease, place them for a few seconds in a weak solution of hydrochloric acid (10 to 15 drops to 30 gm. of water). Wash again in clear water; place them in a solution of chloride of zinc for from 10 to 24 hours, wash again in clear water and dry carefully. They will then have the appearance of being nickel plated.—*Zahntechniche Reform.*

TO MAKE adhesive tin for fillings, Dr. Darby takes an ordinary corundum wheel, one-half inch thick and two inches in diameter, as the model, which is molded in sand. The tin is melted in a ladle and poured into the sand, after which a hole is drilled in the centre of it, so that it can be mounted on an arbor and turned in the lathe. A chisel in the slide turns off shavings of the thickness desired. Pure tin freshly cut from the wheel in the form of shavings is quite cohesive, and packs beautifully.—*Items Interest.*

### A REMOVABLE TOOTH CROWN.

When ready to place the Crown in permanent position, coat the post with chloro-percha. Fill the canal with oxiphosphate and send the crown home. If necessary, from any cause, to remove the crown, it is easily done by heating the crown with any suitable instrument till the post is warmed and the film of gutta-percha softened.—GEO. EVANS, New York, N. Y.

A PECULIAR case of blood-poisoning which caused quite a sensation among the dentists of Berlin. Dr. Bernheim, a dentist of Berlin, extracted a tooth for a lady and got his finger into her mouth, whereupon she closed her teeth with a convulsive firmness on his index finger. After a few hours symptoms of blood-poisoning appeared on the doctor's hand and spread so rapidly that even an immediate amputation did not check the spreading. He became delirious and, notwithstanding the efforts of two physicians, Dr. B. died the following day.—*Berlin Journal.*

HAND cosmetic, for those who desire soft, white hands:

| | | |
|---|---|---|
| ℞ | Lanolin | 20 parts. |
| | Glycerine | 20 parts. |
| | Borate of soda | 10 parts. |
| | Oil of eucalyptus | 2 parts. |
| | Essence of bitter almonds | 25 drops. |

M. Sig:—Rub hands with preparation and cover with gloves at night.—*L' Odontologie.*

IF the gum around a cervico-buccal or labial cavity be painted with trichloracetic acid, it will completely prevent the exudation of moisture into the cavity so that such cavities can be filled without the use of the dam.

The application is not followed by sloughing.—W. E. WALKER, Bay St. Louis, Miss.

### TO OBTUND SENSITIVE DENTINE.

Apply the rubber-dam, remove all soft caries, place crystal zinc chloride in the cavity, tie up the rubber dam so as to make a little water-tight bag, cut off surplus, and proceed with another case while awaiting results.—DR. JACK.

### AN ANTISEPTIC DENTIFRICE.

Prepared chalk, powdered orris root, soap, glycerin, and an equal quantity of pulverized potassium chlorate.—*Am. Med. Surg Bulletin.*

OFFENSIVE odor of the breath may be overcome by the habitual use of Eucalyptus and Thymol Antiseptic. Add a teaspoonful to a tumblerful of water for a mouth-wash and gargle. For bad breath caused by gaseous eructations of indigestion, Eucalyptus and Thymol Antiseptic is an excellent remedy, in doses of twenty to thirty drops in a little water.—*Register.*

### EASY REMOVAL OF TARTAR.

In the use of sulphuric acid in a ten per cent. solution, with this little platinum spatula, I find I can remove tartar very easily. Ever since Dr. Kirk put in my hands some asbestos fibre, which is as fine as cotton, I wrap a little of it around the blade, and I can carry the asbestos fibre, after dipping it in the acid, around the roots in places that I could not reach in any other way, and by a little mechanical rubbing or abrasion with the asbestos fibre and sulphuric acid the tartar is loosened very rapidly. With this and ordinary chisels you can go over a mouth and remove at least nine-tenths or all of the tartar with it, and not injure the gums in the slightest degree, and certainly not the alveolar process.—DR. GEORGE S. ALLAN, in *The International Dental Journal.*

### TO CHECK EROSION.

Rinse the mouth thoroughly, twice a day, with alcohol, till a stinging, burning sensation is produced. The action of the alcohol on the mucous glands changes the character of the secretions, diminishing and finally arresting erosion.—DR. MERRIAM.

### TO STRENGTHEN THE PLASTER TEETH OF MODELS.

In filling an impression for a partial plate where there is danger of plaster teeth breaking, small wooden pegs, such as used by shoemakers, placed in the tooth sockets with the plaster will prevent any such accident; and will also be found to give no resistance to cutting teeth down when about to imbed model in flask.—A. A. BURNS, in *Dom. Jour.*

If ladies' dressing pins, with the heads cut off, are used for the above purpose, they will be found infinitely preferable, as they are not so bulky and can be used as well in plaster as in wax or modeling compound impressions.—ED.

### PROTECTION OF CEMENT FILLINGS.

Instead of paraffin which scales off as soon as wet, melt together rosin and wax on a spatula, and pour on the filling after it has stood a few minutes After a day or to they will take a polish almost like ivory.—E. T. DARBY.

BLACKEN your hickory or orange wood wedges with your lead pencil and see if they don't go in between the teeth much nicer. Try it.—C. E. K.

### MEDICINE FOR STERILIZING AND THE TREATMENT OF PULPLESS TEETH.

I believe you can treat every pulpless tooth in the mouth satisfactorily with an emulsion of fluo-silicate alone (saturated solution).

It is odorless and it is almost absolutely tasteless. You can sterilize any instrument you want to use about the mouth or antrum or root of a tooth with it. Instruments will be completely disinfected in ten minutes.—A. W. HARLAN.

### MOUTH POULTICE.

Dr. Hugenschmidt recommends as the only practical poultice that can be used in olocolar abscess, a fig boiled in a solution of boric acid and cut in halves, and the cut surfaces sprinkled with powdered boric acid. It will in most cases cause the abscess to discharge into the mouth. Should the abscess be far advanced and threaten to break through the cheek, then apply an ice compress with the above.—*Journal fur Zahnheilkunde.*

TO MAKE PLASTER set hard, the *American Druggist* says: "Mix best plaster of Paris with about one-tenth (according to effect ascertained by preliminary experiment) or very finely powdered marble dust (calcium carbonate) or add to it about six per cent. of powdered alum, or about the same amount of ammonium chlorid, before mixing with water.—*Items.*

### TO MAKE GUTTA-PERCHA FILLINGS WATER-TIGHT.

Varnish floor and walls of cavity with common resin dissolved in chloroform. Quickly pack in softened gutta-percha with a cold plugger, and trim the borders with a thin hot instrument.—J. G. TEMPLETON.

### TO SECURE A CLAMP WHICH TENDS TO ROCK OR SLIP OFF THE TOOTH.

Soften sealing wax, or modeling compound, and mold it over the tooth on each side of the one to be filled, including that part of the clamp which is clear of the cavity.—JOHN GIRDWOOD.

### HYPERSENSIBILITY OF TEETH.

Dr. H. H. Edwards writing for Spain to the International Dental Journal says:—Such a case presented itself to me the other day. A patient came complaining of hypersensibility of the second right upper molar. It stood alone, occluding with its fellow below, was slightly loose, had no decay, but so sensitive to heat and cold—on account of the roots being denuded—that eating and drinking was simply a misery. I tried all the means I knew to reduce the sensibility, but without avail. Killing the pulp or extracting the molar were means I hesitated to employ except as a last resource. The suggestion of wearing artificial teeth did not meet with his approval, by which means the tooth would have been covered with the plate, and would have no doubt improved the situation. I took, as an experiment, cotton-wool and mastic, and tried a strand around the molar; the result being satisfactory, I took an impression of the molar with wax—being preferable to modelling compound on account of the temperature necessary—and made a very thin shell of vulcanite, perfectly fitting the tooth to the margin of the gums, leaving the crown exposed for the purpose of articulation The shell or overcoat, cemented on with oxyphosphate, has been in wear a month, and has completely frustrated contact with heat or cold. I may say it has proved a success. By such simple means I have been enabled to save the molar alive, and receive the thanks and confidence of my patient.

## DIAGNOSIS OF PULP STONES.

Persistent resistance to arsenic is a good diagnostic symptom of pulp stones. "Persistent pain that you cannot stop means pulp stones, and it means it always. There is no question about it."—*Ottolengui.*

DON'T be concerned so much because your competitor works cheaper than you, if your work is better than his. The most sensible and best paying people seek the best, not the cheapest dentist.—*Items.*

## COPPER AMALGAM.

Don't use any copper amalgam in any of the teeth near the front of the mouth, no matter how small the cavity. If the patient is young it is sure to stain the tooth. I have seen several beautiful bicuspids ruined or otherwise disfigured for life with it.

WHEN the mucous membrane of the mouth or throat is inflamed, rinse the mouth, and gargle the throat with pyrozone, then use a solution of boro glycerin 1 to 10. This is effectual, and is a great soother.—*Review.*

THE formula of Watts' metal for cast plates is: Tin, 40 dwt.; silver, 8 dwt.; bismuth, 16 grains.—J. E. DAVIS, Columbus, O.

IN using trichloretic acid the addition of two drops of oil of cassia to a three per cent solution is desirable.—*Review*

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# THE HISTORY OF ANÆSTHESIA.

BY JAS. MCMANUS, D. D. S.

The history of modern anæsthesia has been given to the world by many writers, for both medical and literary magazines, as well as through the newspapers, in such a careless, ignorant, and untruthful manner, that it is not to be wondered at that the public is befogged and uncertain as to who should be given the credit and honor as the discoverer. A true and concise statement of a few facts, that tell of the discovery, and by whom it was made, will no doubt be of interest at this time, as the dental profession of the country has recently held commemorative exercises in honor of the fiftieth anniversary of the discovery, December 11, 1844, by Dr. Horace Wells, a dentist, of Hartford, Connecticut.

In looking up the records of the centuries we find mention of various medicines that have been used for the purpose of rendering patients insensible to pain during surgical operations. Homer mentions the anæsthetic effects of nepenthe. Dioscorides and Pliny allude to the use of mandragora. Lucius Apuleius, who lived 125 A. D., and whose works were published in the fourteenth century, says that "if a man has to have a limb mutilated or burnt, he may take half an ounce of mandragora wine and whilst he sleeps, the member may be cut off without pain." A Chinese physician who lived in the third century, named Hoatho, gave his patients a preparation of hemp, whereby they were made insensible during surgical operations. The soporific effects of mandrake are mentioned by Shakespeare, as well as other draughts the composition of which is not given. It is on record that the ancient Chinese, Greeks, and Scythians used preparations of mandragora and hemp with some success during surgical operations; but their preparation and use were abandoned. For centuries, opium and alcoholic stimulants were the only agents that the surgeons could rely on, to help their patients endure the pain of an operation.

After the discovery of nitrous oxide gas by Dr. Priestly, Sir Humphrey Davy made a series of experiments, the results of which were published in 1800, in his volume of "Researches in Nitrous Oxide Gas" He states that April 11, 1799, he made his first inspiration of pure nitrous oxide gas, and for a year after, he made an exhaustive study of the gas, and also many experiments with it, both on himself, and medical and other friends. He states on page 276 that one day while suffering pain, caused by cutting a wisdom tooth, he found that while breathing the gas, he got relief from pain. He also says that he once imagined that the pain was more severe after the experiment than before. On the last page but one of his book, he made this suggestion. "As nitrous oxide gas appears capable of destroying physical pain it may probably be used to advantage during surgical operations, in which no great effusion of blood takes place."

Horace Wells.

The closing paragraph in his book states: "That pneumatic chemistry in its application to medicine, is an art in infancy; weak, almost useless, but apparently possessed of capabilities of improvement. To be rendered strong and mature, she must be nourished by facts, strengthened by exercise, and cautiously directed in the application of her powers by rational scepticism." Many of the famous surgeons of Europe must have been more or less familiar with his published work, yet there is no record that any surgeon dared to act on his suggestion or that any one had confidence enough in his statement to advise any sufferer to do so. Sir Humphrey Davy lived for many years after the publication of his book, attaining both wealth and distinguished honors, and it is only fair to presume that he did not even think that he had made a great discovery, for if he had, he certainly would have put it to a trial.

The anxiety that oppressed the surgeon was in no way lessened by the suggestion of Sir Humphrey Davy, and the dreaded operating day at the hospital often taxed the moral and physical courage of the surgeon to a greater degree than it did the agonized yet hopeful patient that awaited the operation. It was only a few years previous to 1844, that the celebrated French surgeon, Velpeau, published the following hopeless statement in his work on surgery: "To avoid pain under incisions is a chimera, which is no longer pursued by any one. A cutting instrument and pain in operative surgery are two words, which never present themselves separately to the mind of the patient; and of which he must of necessity admit the inevitable association."

This statement was accepted by many as authorative and final; and the few, who still hoped that some agent would yet be found that would lessen the horrors of surgical operations, were looked upon by the majority of surgeons as idle dreamers; and for this reason, every surgeon was ambitious to rank as a rapid operator. "The quicker the surgeon, the greater the surgeon," was the professional and popular belief during the first half of the present century.

House in which Dr. Wells Lived, in Hartford.

Fortunately the number of severe surgical cases are comparatively few, while we all know that every member of the human family, sooner or later, must submit to having one or more teeth extracted. As the demands for dental operations were of daily occurrence, the dental practitioner had constant evidence that all patients showed more or less fear and dread of the operation, and the great need for some safe agent to give relief, was constantly impressed on the mind of the dentist.

We have the testimony of Linus P. Brockett, M. D., of Hartford, Connecticut, that in the summer of 1840, while conversing with Dr. Wells, he found him deeply impressed with the idea, that some discovery, would yet be made by which dental and other operations might be performed without any pain. For forty-four years medical and chemical professors, and popular lecturers were experimenting with the gas; and not one of them caught the idea, or dared put to the test the suggestion made by Sir Humphrey Davy in 1800.

Professor G. Q. Colton gave a course of lectures on chemistry and natural philosophy in Hartford, early in December, 1844. To popularize as well as amuse the audience at these lectures, the exhibition of the effects of laughing gas on willing subjects was made a special feature of the entertainments. Dr. Horace Wells, well known in Hartford as a skillful dentist, attended with his wife the lecture given the evening of December 10th, 1844. Dr. Wells inhaled the gas: the effect not being as pleasant as his wife wished, for she reproached him on the way home for taking it, and making himself ridiculous before a public assembly. Dr. Wells went to that lecture to see, hear, and learn. He inhaled the gas, and subsequently watched its effects on others. The exciting incident to him at the entertainment was when Mr. Samuel A. Cooley, a well-known Hartford citizen, gave a lively exhibition of the effects of the gas by running and jumping about, and falling, striking his legs against the wooden settees, and acting apparently perfectly unconscious of possible danger. After the effects of the gas had passed off, Dr. Wells asked him if he was not hurt, and he replied that he did not know at the time, but on looking at his legs found them bleeding from the injuries he had received. Dr. Wells turning to Mr. David Clark said, "I believe a man by taking that gas, could have a tooth extracted or a limb amputated and not feel the pain."

Dr. G. Q. Colton.

Before leaving the lecture hall, Dr. Wells asked Professor Colton whether one could inhale the gas, and have a tooth extracted without feeling any pain, and he replied that he had not given the subject any thought, that he had been giving the laughing-gas for over a year, and such an idea had not occurred to him and he could not express an opinion. Dr. Wells said he was inclined to try the experiment on himself, and have a troublesome tooth extracted if he could bring a bag of the gas to his office the next day. Late that evening Dr. Wells called on Dr. Riggs to tell him of his experience at the lecture, and that Mr. Cooley had injured himself and was not conscious of it;

adding, "if he did not feel pain, why cannot the gas be used in extracting teeth." A long discussion followed as to whether it would be right, or safe, for them to make such a trial, with possible danger to health and life; but Dr. Wells was so confident and fearless, that he agreed to take the gas and have a tooth extracted the next day if Dr. Riggs would perform the operation. As requested, Prof. Colton the next morning brought a bag of the gas to the office of Dr. Wells. There were present Drs. Wells and Riggs, and as onlookers a Mr. Colton and Mr. Cooley, the star performer of the night previous.

DR. J. M. RIGGS.

Dr. Wells sat down in the operating chair, took the bag into his hands and at the possible risk of his life, inhaled the gas until he was insensible, when Dr. Riggs extracted an upper wisdom tooth. Dr. Wells remained unconscious a short time and on recovering exclaimed, "I did not feel it so much as the prick of a pin;" "A new era in tooth pulling." "It is the greatest discovery ever made," and other remarks of a similar nature, being perfectly delighted with his successful experiment. It was at his own suggestion and desire that he deliberately took the gas, and its value as suggested by Sir Humphrey Davy in 1800, was proved a certainty December 11th, 1844, when the first surgical operation was successfully performed on Dr. Horace Wells while under its influence. On that day *Modern Anæsthesia* was given to the world, and nitrous oxide gas proved to be a blessing to suffering humanity and the forerunner of all other anæsthetics.

We have the testimony of Dr. J. M. Riggs, "that we were so elated by the success of this experiment that we turned our attention to the extraction of teeth by means of this agent, and continued to devote ourselves to this for several weeks almost exclusively." With ample evidence to substantiate his claim, a few weeks later, in January, 1845, Dr Wells went to Boston to make generally known and to demonstrate his great discovery. He obtained permission of the elder Dr. Warren to address his class in the medical college, and at the close of his remarks he gave the gas to a boy and extracted a tooth. The boy made an outcry and the students hissed and cried humbug, although the boy on recovering said he did not know when the tooth was drawn. The first and only trial allowed Dr. Wells was denounced as a failure. If the surgeons of the Massachusetts General Hospital or any of the medical or scientific men of Boston or the country ever knew of the suggestion made by Sir Humphrey Davy, they evidently had forgotten it, or had no faith in his statement.

Dr. Wm. T. G. Morton had been a student of dentistry with Dr. Wells in 1841 and 1842, but was living in Boston and renting an office of Dr. Charles T. Jackson. These gentlemen tried to dissuade Dr. Wells, having no faith in his statements, and advised him to give up the use of the gas. Dr. Jackson, noted as a chemist, treated the subject increduously as did the surgeons and students, calling it a humbug. That a dentist from a country town could appear in Boston, and announce to the world that he had made such a grand discovery was not to be credited, and Dr. Wells soon learned that not one of the influential medical or scientific men of Boston could be induced to interest themselves in investigating the properties of the gas, or to assist him in any way while he remained in that city. They preferred to hiss and cry humbug rather than to give Dr. Wells a second chance to prove the value of his discovery. Dr. Wells returned to Hartford, disappointed and discouraged at the lack of interest shown by the medical profession and especially at their ignoring the testimony which he offered, of reputable citizens of Hartford who had had operations performed painlessly, while under the influence of the gas.

In the Boston *Medical and Surgical Journal* of June 18th, 1845, there was an article written by P. W. Ellsworth, M. D., of Hartford, Connecticut, on the "Modus Operandi of Medicine," in which he states, "that the nitrous oxide gas has been used in a number of cases by our dentists and has been found to perfectly destroy pain and no unpleasant effects follow its use." The unjust assumption of the Boston surgeons, that he had made a complete failure in the single experiment allowed him, and their contemptuous treatment of him and his claims gave a set-back for two years to the general introduction of surgical anæsthesia, and millions of sufferers were deprived ot the use of a safe anæsthetic for nearly twenty years. At this time Hartford had no hospital or medical journal to push the introduction of this discovery, and for a time Hartford people alone realized that such a discovery had been made.

Dr. Wm. T. G. Morton, while studying dentistry, lived in Farmington, Conn., and made frequent visits to Hartford as a student to recite to Dr. Wells. He was present when Dr. Wells gave his demonstration before the surgeons and class in Boston, and had frequent talks with him while he remained in the city. During the summer of 1845, he visited Hartford and called with Dr. Wells on Dr. Riggs to talk about the gas and he wanted them to give him some, and tell him how it was prepared. Dr. Wells referred him back to Dr. Jackson, who he said could prepare it for him, or tell him how it should be done as he knew all about it. In the summer of 1846, Miss Elizabeth Williams, of Hartford, met Dr. Morton in Stafford Springs, Conn.; learning that he was a dentist, she told him her experience with the gas and that Dr. Wells had extracted a tooth for her on the 6th of March, 1845. He asked her about the effect and operation of the gas, and gave no intimation to her that he had any knowledge of the gas, or any other anæsthetic. Drs. Wells, Riggs and Terry continued to give the gas in their practice with success, and they were greatly surprised, when they learned that Drs. Jackson and Morton were heralded in the Boston papers, in the fall of 1846, as the discoverers and inventors of a compound which they stated, by breathing into the lungs, induced so deep a slumber as to enable them to perform the most painful surgical operations with entire unconsciousness on the part of the patient. Dr. Morton made his so called discovery, September 30th, 1846, when he extracted a tooth for Mr. Eben. Frost, while he was under the influence of his pretended compound. Soon after he called on Dr. Warren, who arranged for him to test his compound, on the 16th of October, when he made his first experiment at the hospital in a surgical case. Boston surgeons were at last convinced that anæsthesia had been discovered, and Boston men were the discoverers. The managers of the Massachusetts General Hospital were now ready to claim for their institution the honor and credit of first demonstrating this great fact to the world, and Boston surgeons, Boston newspapers, and the public, were now very much interested and only too ready and anxious to assist the assumed discoverers in introducing their pretended discovery, and advising its use in general surgery.

The possible money value that might accrue to them from a vigorous pushing of the discovery, set the doctor and dentist to figuring out futures, and they decided to take out a patent, which was applied for October 27th, 1846. Before the patent was granted, Dr. Jackson, fearing he might be censured, or even expelled from the Medical Society, if he took out a patent, made an assignment which apparently gave to Dr. Morton all his right, title, and interest in the then assumed invention; but for which act he obligated Dr. Morton to pay him ten per cent. of all he made out of it, and later on, through his counsel, he demanded twenty-five per cent. of all the profits both at home and abroad, which Dr. Morton refused to give. The patent was granted November 12th, 1846, circulars were sent out with the names of Drs. Jackson and Morton as the discoverers and inventors of a compound that later proved to be the well known fluid, Sulphuric Ether. Agents were sent out to sell rights. The doctor, dentist, or anybody qualified or not, who would pay the price could buy the right to use this wonderful and powerful agent. The scale of prices being: for cities of over one hundred and fifty thousand inhabitants, two hundred dollars; fifty thousand and under, one hundred and fifty dollars; cities, under five thousand, thirty-seven dollars, for seven years, the life of the patent. Soon after there was a bitter controversy between the Boston discoverers, and the public then learned that each one denied that the other had any just claim for the credit of the discovery.

Late in the year 1848 chloroform was introduced by Prof. James Y. Simpson, M. D., Edinburgh, Scotland, and that for a time seemed to supplant Sulphuric Ether. Drs. Jackson and Morton from the start had persistently stated that nitrous oxide gas was a failure and that it was not an anæsthetic. The death of Dr. Wells, January 24th, 1848, left the field open for them, and as the new agent, chloroform, was making a successful record, it soon became so popular that the use of the gas was given up and by many forgotten. Hartford had no medical schools, hospital surgeons of national reputations, or professional journals, to compete with Boston, while all these influences were freely given to aid the Boston claimants in their attempt to rob Dr. Wells of the honor and credit of his discovery. Boston influence aided them in their successful appeals to the rich, and the profession for remuneration; and Boston money helped them, in wining and dining a memorable lobby influence in its attempts to get through Congress a bill granting them one hundred thousand dollars, for the use of their pretended discovery by the Army and Navy. Through the efforts of the Hon. Truman Smith, United States Senator, and the members of Congress from Connecticut, the passage of the bill was defeated.

The surgeons and public were soon convinced that chloroform and ether were uncertain and dangerous agents. The frequent deaths reported, and the ill effects that often followed their use, caused a feeling of dread on the part of both patient and operator so that comparatively few cared or dared to risk taking or giving either of them. From 1848 until 1863, the longing for a safe anæsthetic was universal. Again, Professor Colton appeared before the pubic as a lecturer and exhibitor of laughing gas. In his lectures he related the history of the discovery of anæsthesia by Dr. Wells, and after his lecture in New

Britain in 1862, he gave instructions to Dr. R. C. Dunham, and he introduced the use of gas in his practice there, and in Hartford. Later, Dr. Joseph H. Smith, of New Haven, revived the use of the gas in that city, and from that time on its use has been general all over the world. It is only those who have had to undergo severe surgical operations that can fully realize what a great blessing the discovery and introduction of anæsthesia is to the world, and it is only the surgeons now living that were in practice over fifty years ago, that can fully appreciate and realize the blessing this discovery is to the profession.

Several years after Dr. Wells had proclaimed and demonstrated his discovery, Dr. Crawford W. Long, of Georgia, discovered—*that he had discovered*—as early as 1842, the properties of Sulphuric Ether, and had performed an operation on a patient while under its influence. This information was not given to the public until December, 1849. He says, in referring to his delay in making the fact known: "I leave it with an enlightened medical profession, to say whether or not my claim to the discovery of anæsthesia is forfeited by not being presented earlier; and with the decision which may be made, I shall be content." It is possible, that many surgeons in different parts of the world, at nearly the same time, or in the remote past, may, with the aid of some agent, have performed surgical operations painlessly as claimed by Dr. Long, but failing to publicly announce their success, the world gained no benefit. Dr. Wells discovered, demonstrated and proclaimed the fact at once; and then within one month's time, traveled over one hundred miles to Boston to make it generally known. The public should not be allowed to forget that the simple, honest Christian desire of this dentist was to give his discovery to all, to be "free as the air we breathe." The motive that actuated Drs. Jackson and Morton, when they put their assumed invention on the market, was to get money. Its commercial value was its dominant idea, and it was well worked up. Dr. Jackson sneaking behind the cover of an assignment of his rights, in order to hold his membership in the Medical Society, demanded twenty-five per cent. of all the profits, both at home and abroad, from Dr. Morton. This resulted in a Kilkenny fight, each denouncing the other as a fraud. A bitter controversy followed, each claimant having friends enough to furnish the Medical Journals and newspapers with lively reading for years after.

Dr. James Y. Simpson, of Edinburgh, Scotland, was the only man connected with the introduction of anæsthesia who had a remarkably fortunate life. He was eminently successful in his profession, acquired wealth, was created a baronet, and was probably better known all over the world, than any one else connected with the discovery. The last professional article he gave to the public was written by dictation, while on his sick bed, in reply to a bitter and unjust attack made upon him by Dr. Jacob Bigelow, of Boston. It was published in the Boston Gynæcological Journal for May, 1870. He writes:

STATUE OF DR. WELLS IN BUSHNELL PARK.
Inscription.—"Horace Wells, the Discoverer of Anæsthesia, December, 1844."

"An American dentist works out to its practical results, the suggestion published in England half a century before, by Sir Humphrey Davy, and which you seem to wish to efface from anæsthetic records; and he travels a long distance to place the important result before the Medical School at Boston, and some surgeons at the Massachusetts Hospital. There is a slip in the single experiment allowed him. He is sperned and hooted away. In doing this, the Medical School of Boston thus delays the whole subject of artificial surgical anæsthesia for a couple of years. Was not the Medical School of Boston, then, in your violent language, 'chargeable with the continuance of operative tortures,' for that period much more than Sir Humphrey Davy? Did not your school stamp out—and thus prevent for two years more the most beneficent discovery which has blessed humanity since the primeval days of paradise?'"

Sir Benjamin Ward Richardson says in his recent monograph, "The Mastery of Pain":

> "It was fortunate that ether came in before chloroform; because if chloroform had come in first, the number of deaths from it would probably have put a stop to anæsthesia at once."

It is infinitely more fortunate that gas came in before ether, for the demands for its use are more urgent and general, and the deaths from it, do not number more than one in over a million. There is no doubt if Dr. Wells had been a resident of Boston, an M. D., and a member of the staff of the Massachusetts General Hospital, his discovery in 1844 would have been quickly accepted. As a stranger and a dentist, his claim as a discoverer, and the evidence he had to sustain it, could not awaken enough interest in the minds of the stupid, stubborn, and jealous men that he appeared before, to induce them to make another trial of the gas. They condemned it as a humbug and suffering humanity was deprived of the blessing of an agreeable and safe anæsthetic for over twenty years.

The introduction of modern anæsthesia in all its varied modes of administration, is undeniably the result of a dentist's heroic experiment and discovery. It is true, that it was two years after the discovery, and after repeated successful operations in the hands of Hartford dentists, before Boston surgeons could be induced to accept the fact that an anæsthetic had been discovered.

The record is now well up in the millions of successful operations performed while under the influence of the gas; and there is abundant testimony that Dr. Wells was the first to submit to a surgical operation while under its influence. The General Assembly of Connecticut, in 1847, passed resolutions in favor of Dr. Wells as the discoverer of anæsthesia and declared that he was entitled to the favorable consideration of his fellow citizens, and to the high station of a public benefactor. The Court of Common Council of the city of Hartford passed resolutions to the same effect. The physicians and surgeons of the city of Hartford, united in a testimonial declaring their belief in the justice of the claims of Dr. Wells. The Medical Society of Paris, France, in January, 1848, voted that to Dr. Horace Wells, of Hartford, Connecticut, is due all the honor of having first discovered anæsthesia. On Bushnell Park in Hartford there stands a monument erected by the State of Connecticut, and the city and citizens of Hartford, commemorating this great discovery of anæsthesia first given to the world in Hartford in 1844, with the name inscribed and a portrait statue of Dr. Horace Wells, to whom alone belongs the honor of the discovery. When it was proposed, some months ago, to celebrate the 50th anniversary, it was decided that there could be no more fitting testimonial than for his brother dentists to place a tablet, and mark the very spot where his discovery was made. It was fortunate that it could be placed in a most conspicuous position, to be a perpetual reminder to the public of the great obligation they are under to this dentist. Hereafter no one can visit Hartford without having the truth of this discovery brought very visibly before him. In the light of recent publications in the magazines, it would seem as if the tablet in this respect alone would have a mission.

## THE FIFTIETH ANNIVERSARY.

The tablet is a fine piece of bronze work from the foundry of Mr. Mossman, of Chicopee, Mass. It is five feet long by twenty-nine inches wide and bears the following inscription :

To the memory of
HORACE WELLS, DENTIST
who upon this spot
DECEMBER 11TH, 1844
Submitted to a surgical operation
DISCOVERED
Demonstrated and Proclaimed
the blessings of
ANÆSTHESIA

It is probably the largest out-door Memorial Tablet placed on the front of a public building in this country. The committee were very fortunate in their selection of the sculptor, Mr. E. S. Woods, of Hartford. He has made a beautiful and artistic tablet that will attract for years to come, the attention of all lovers of the true and beautiful in art.

The fiftieth anniversary of the discovery of anæsthesia by Dr. Horace Wells in this city, December 11, 1844, was formally observed by a banquet at Habenstein's cafe. The banquet was given under the auspices of the Connecticut Dental Association and was presided over by its president, Dr. Charles P. Graham of Middletown.

At the right of the toastmaster sat Governor-elect Coffin, of Middletown, Dr. G. W. Russell, of this city, Dr. G. Q. Colton, of New York, Dr. Henry Barnard, Judge Thomas McManus, and Dr. John Dwyer, of this city. On his left was seated Charles T. Wells, John Addison Porter, Mayor Leverett Brainard, President G. W. Smith, of Trinity College, Rowland Swift, and Dr. C. C. Barker.

The divine blessing was invoked by President Smith. An elaborate menu was served.

As it was necessary for him to take the 10.05 train for home, Hon. O. V. Coffin made a brief speech thanking the members for their kindness in sending him an

HORACE WELLS
DISCOVERED

invitation and congratulating them on their worthy enterprise. Cheers were given as the governor-elect left the room.

President Graham in opening the post-prandial exercises referred to the beneficent effects on humanity of Dr. Wells' discovery. He introduced the several speakers of the evening in a felicitous manner, who were Mr. Charles T. Wells, the only living descendant and son of Dr. Horace Wells. Mayor Leverett Brainard, Dr. C. C. Barker, of Meriden, President of the Connecticut Valley Dental Society, Dr. G. Q. Colton, of New York, eighty-one years of age, and who as a young man was associated with Dr. Wells at the time of his experimenting fifty years ago. He retold the story of the discovery. Dr. G. W. Russell, Dr. P. W. Ellsworth, Dr. H. P. Stearns, superintendent of the Hartford Insane Retreat, President G. Williamson Smith of Trinity College, Henry Barnard, LL. D., Judge Thomas McManus, and E. S. Woods, the sculptor.

Dr. James McManus referred to the sincere regret of all that Dr. Parmele was unable to be present. "Up to this noon he expected to be with us but to-night he was unable to come out," he said. "He has worked hard to make this movement a success and it is a great disappointment to him not to be with us to-night. To-morrow the anniversary will be celebrated at Philadelphia where three dental colleges will participate. The formal celebration will be held there, but this banquet to night is the introductory celebration of the anniversary. The tablet that has been erected has been provided by only practicing dentists and the contributors are located all over the country from Portland, Maine, to Portland, Oregon. The erection of the tablet is no local act, but is a friendly tribute from the entire country.

President Graham then read telegrams and letters of regret from Governor Morris and Lieutenant-Governor Cady, Senator Joseph R. Haley, Major-General William B. Franklin, Charles J. Hoadley, LL. D., Hon. A. E Burr, Charles Dudley Warner, Colonel A. A. Pope, Richard Burton, Dr. C. T. Stockwell, of Springfield, Mass., Charles Hopkins Clark, and Colonel Samuel A. Cooley, at the conclusion of the speeches.

Dr. James McManus moved that the tablet be presented to the city of Hartford and the members voted unanimously to make the presentation. After a rising vote of thanks had been extended to Sculptor Woods, the party marched up Pratt street and down Main, stopping at the front of the building of the D. S. Robinson estate on which the tablet is erected. Here at 12.40 o'clock Sculptor E. S. Woods cut the cord that upheld the veil and the son of Dr. Wells, Charles T. Wells, of this city, unveiled the tablet.

Dr. James McManus in a brief and fitting speech presented the tablet to the city, and Mayor Brainard made a patriotic response accepting the tablet in behalf of the city and assuring the Connecticut Dental Association of the approval of his action by the Common Council. The unveiling and presentation to the city at this hour of the night made the scene extremely impressive. The party then broke up after a hearty clapping of hands at the completion of the enterprise.

## COMMITTEE OF ARRANGEMENTS.

The committee for arranging all details for the memorial tablet and the dinner were: Dr. George L. Parmele, chairman; Dr. James McManus, treasurer; and Dr. Civilian Fones. Others present at the banquet were: John Addison Porter, Dr. William J. Rider, dental commissioner, of Danbury; Dr. R. Wentworth

Browne, commissioner of New London ; Dr. James McManus, of Hartford ; Dr. Edward S. Gaylord, of New Haven, Dr. R. C. Dunham of New Britain, Dr N. Morgan of Springfield, Dr. George A. Maxfield of Holyoke, Dr. L. C. Taylor Dr. Charles McManus, Dr. Henry McManus, Dr. N. J. Goodwin, Dr. Joel F. Wright, Dr. A. E. Wales, of New Britain, Dr. Monroe Griswold, Dr. Edward Eberle, Rowland Swift, Ernst Schall, H. C. Ney, R. A. Wadsworth, and Dr. John Dwyer, all of this city; Dr. Alfred Fones, of Bridgeport, Dr. Daniel A. Jones, of New Haven, Dr. William H. Rider, of Danbury, Dr. E. M. Smith, of Newtown, Dr. J. Tenny Barker, of Wallingford, Dr. G. M. Griswold, of Manchester, Dr. F. W. Murless, Jr., of Windsor Locks, and Dr. M. M. Maine, of South Manchester.

The stranger visiting Hartford or passing through on the cars from the south, is attracted first by the massive and beautiful buildings of Trinity College, the towers of St. Joseph's, one of the most beautiful and grand specimens of cathedral architecture on this continent, and the gilded dome of the State Capitol building on the heights of Bushnell park. The statues of historic men on the east front of the Capitol, and the bas-relief pictures of early incidents in the history of the State ; with the statues of Nathan Hale, the martyr spy of the Revolution, and Wm. A. Buckingham, the war Governor, during the rebellion, within the building—these all give but a meagre idea of what the Commissioners have suggested and planned for the future artistic ornamentation of the building and Capitol grounds. The unique and beautiful Soldiers' and Sailors' Memorial Arch, that as the years roll on, will be even more admired and appreciated than it is to-day. The statues of Bishop Brownell on the College Campus, and Dr. Horace Wells,General Israel Putnam and Governor R. D. Hubbard on Bushnell Park, and the heroic statue of Nathan Hale, by our Hartford sculptor, Mr. E. S. Woods, that stands on the lawn in front of the public library ; with the Memorial Tablet by the same artist to Dr. Wells on the D. F. Robinson building on Main street ; all these attest the advance that Hartford has made in art development within the past few years.

The contemplated encircling the city with a system of beautiful parks, will give, even before their completion, to our city a name and fame as one of the most lovable cities in the Union. The one blot on our good name, is the neglect of care for the Old Center burying ground. When our citizens fully realize how beautiful an approach to the Bushnell Park can be secured by widening Gold street ; with a memorial arch and bridge at the new entrance to the Park ; with a statue of Dr. Bushnell placed over the entrance ; and the old Center Church, set as it were in a new park, with the historic old burying ground in the background—they must, and will see to it, I hope, very soon, that this very much to be desired change of surroundings is effected.

# A VALUABLE MANNER OF TAKING IMPRESSIONS FOR CROWN AND BRIDGE WORK.

By Theodore F. Chupein, D.D.S., Philadelphia, Pa.

Every one who has taken impressions with plaster of Paris for crown and bridge work, or indeed plaster of Paris impressions for any partial cases, where some of the natural teeth remain, have observed how the plaster will adhere to the necks of the teeth and is broken away when the impression is withdrawn. Many suggestions have been advanced to overcome this, such as mixing the plaster very thin, drying the teeth and painting the necks with glycerine, oil or soap solution before introducing the plaster in the tray, but, in our hands, without effect.

In an article which we lately offered to our readers, "The Construction of Crown and Bridge Work," published in the January 1895 issue, we stated that if pieces of orange wood were whittled to a double wedge, as shown by Fig. 1, the breaking away of the thin septum of plaster between the teeth could be thus avoided. While this prevents the fracture at these points, it does not prevent the plaster from adhering at other parts of the teeth, so that the impression may not be termed absolutely perfect, at the parts which it is essential for it to be so.

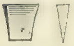

Fig. 1.

We now offer another suggestion to this end. We use in our laboratory thin lead for taking the patterns of gold or silver plates, the shapes of clasps, &c., &c. We do not mean by this the "Pattern metal" of the depots, but lead that we have rolled down for this purpose. We cast an ingot of lead in our ingot mould and have this rolled down to No. 30 gauge, which is thin enough yet stiff enough for all uses we make of it. Taking a piece of this metal, about one and a half inches long, and about the one-sixteenth of an inch wide (for some cases—wider for others) we bend it around the tooth, and with a pair of flat nose pliers we draw it snugly against the tooth, and with a burnisher fit it closely. The lead being inelastic keeps it thus close to the tooth, when we cut off the projecting ends, as shown by Fig. 2. Leaving these bands on the teeth to which we desire to fit gold crowns on bands, we prepare our batter of plaster of Paris, put it in the impression tray and then convey it to the mouth with these lead bands in position, as shown by Fig. 2. The extensions of the bands engaging in the plaster bring the bands away in the impression, and when the die is made—for we use only our Crown Metal, for dies or models for

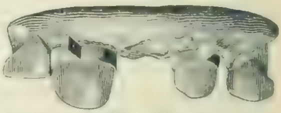

Fig. 2.

bridge work—the lead bands may be unwrapped or removed, leaving the tooth or root perfect, at the point where it is necessary to fit a gold band, crown, collar or face plate.

This manner of taking impressions for crown or bridge work has another advantage. The gum at the neck of the tooth, though so free as to permit an instrument to pass between it and the tooth or root, is yet sufficiently tough or unyielding to prevent the soft plaster when it is introduced in the impression tray to take a perfect impression of the neck of the tooth, which is the part to which the band is to be intimately fitted. The lead band forces this loose or free gum away from the neck of the tooth, and permits a perfect adaptation of a crown, band or collar. By this plan a perfectly fitting crown may be made *out of the mouth*, which is a great advantage.

If this suggestion be carried out by dentists who send their models to Dental Depots to have ready made crowns fitted to them, and would use our " Crown Metal "—instead of a Plaster of Paris Model —they would save themselves very much annoyance, for in doing this the clerks at the Depots generally make the Model fit the Crown, instead of making the Crown fit the Model—owing to the readiness of the plaster breaking away from the plaster model, which is not the case when a " Crown Metal " die is used. The article in the January 1895 No., to which we have alluded, gives full instructions how these dies are made, which is done in less time that the making the same with plaster of Paris.

We would further add that when the tooth or root which is to be covered with a gold crown is wide or high above the gum, the lead band should be correspondingly wide, otherwise there will be difficulty of removing the lead band from the " Crown Metal " die.

## SALIVARY AND SANGUINARY CALCULI.

By W. H. Roop, Germantown, Pa.

[Paper read before the Pennsylvania Association of Dental Surgery.]

In offering the few following remarks, I do not promise to give an essay on this interesting subject; but have written them for the sake of discussion which may prove beneficial to all in the treatment of this very injurious and prevalent affliction.

Salivary and Sanguinary Calculi may be defined as calcareous deposits on the teeth and especially their roots, precipitated from the salivary glands.

Sanguinary Calculi, the result of inflamatory action, consists largely of the solid parts of the saliva, chlorides of sodium and potassium, phosphates of calcium and magnesium, together with epithelial, animalculæ and vegetable organisms found in the mouth. It is therefore of an alkaline nature.

Why does this accumulate? I would answer, for the same reason which makes a tooth-brush necessary, in other words, insufficient use of the teeth. The cook prepares the food, we swallow it.

Can this be prevented? I would say: No. But with proper brushing it could be dislodged twice daily, in a majority of cases, provided the roots are not greatly exposed.

This precipitation may be accounted for in a number of ways. The chemical action of the breath passing through the mouth; and various articles of diet coming in contact with the secretions.

It is not my purpose, however, to discuss *how* this happens, but how to prevent the injurious effects is the question. Now we all agree that the first thing to be done is to thoroughly remove every particle with properly-shaped instruments, to be followed by remedies calculated to restore, at least, in a measure, the healthy condition of the gum and sockets. With this treatment you are quite familiar.

*Secondly.* Teach your patient how to prevent a recurrence of these conditions. The most essential is a stiff gum brush, which should be used (much in the same manner as we use the scaler) twice daily, before breakfast and at bed time.

While many remedies have been employed, I would call attention to one which I have never seen mentioned, and which has proved very efficacious in many cases. Acetic acid, in the form of cider vinegar, rinsed through the teeth for a minute after breakfast, in the proportion of one part to eight of water. This, however, should be used only in selected cases.

Phenol sodique, which is not a new remedy, is in my opinion very good treatment, and should be used at night when the vinegar is used in the morning. These treatments faithfully carried out twice a day ought to be sufficient in ordinary cases.

Now what shall we do with loosened teeth where the pereodontium is gone on one part of the tooth to the apex? Shall we bridge them to other teeth and by heroic treatment of the sockets retain them? Yes, in many instances this can be done but they require watching and frequent treatment lest necrosis of the socket and jaw supervene.

## PULP DEVITALIZATION.

Atropin, 1 gr; arsenic, 2 grs. in lanolin. Apply very minute quantity. Seal in with amalgam.—*L. A. Faught.*

# PROBLEM OF SOLDERING ALUMINIUM.

From THE ALUMINUM WORLD, by Joseph W. Richards, Ph. D.

Solders are metals or metallic alloys used for joining together metallic surfaces by being fused between them. Solders are often designated as *soft* and *hard*, according to whether they melt at a low temperature and can be worked with a soldering iron or at a high temperature and need to be worked with a blow-pipe.

The difficulty of making good joints depends to a great extent on the properties of the metal to be soldered. We may class these difficulties under three heads:

1. Difficulty of cleaning. Some metals retain grease and oxide on their surfaces with great tenacity, and if these are not entirely removed they prevent the solder alloying with the metal, and thus it gets no hold. To remove these impediments, the surfaces are first rubbed, scraped or filed, and then a flux is used with the solder or a soldering fluid brushed on the edges. The object of these fluxes is to wash away mechanically or chemically any grease or oxide left, and so to present a perfectly clean surface for the solder to take hold upon. The art of successful soldering largely consists in this careful cleaning of the edges and the use of the correct flux to facilitate the work.

Aluminium is one of the most difficult metals to get perfectly clean. Grease and dirt can be easily removed, but there is always present a thin, continuous coating of aluminium oxide, which effectually resists the ordinary fluxes. It might be thought that a thorough sand-papering or filing of the surfaces immediately before soldering would overcome this, but this is absolutely of no use; the reason why this is so being that the very instant a clean surface of aluminium is exposed to the air it is at once covered with a microscopic coating of oxide, which prevents soldering. This oxide is, chemically, so inert or fixed that none of the ordinary fluxing agents can act on it. To overcome this difficulty, it is necessary either to use some particular flux which can remove the oxide and in some manner preserve the surface clean until the solder can take hold upon it, or to incorporate into the composition of the solder some element which can do the same thing. The latter device has been most successful, as theoretically it should be; for if the solder, as it were, carries its own flux, the action of the flux and the alloying of the solder must necessarily be simultaneous, and therefore most effective.

2. High conductivity for heat. If the metal to be soldered has great power of conducting heat, it interferes greatly with the attempt to produce a local temperature at the joint high enough for the solder

to alloy. Other things being equal, it may be said that the practical difficulty of making a perfect joint increases in exact proportion to the ability of the metal to conduct heat.

Aluminium is next to silver in the scale of heat conductivity. Great practical difficulties are therefore found in preventing the solder from chilling too quickly at the joint, particularly when working on bulky articles. The only manner in which this difficulty can be overcome is by using very hot soldering bolts or blow-pipe flames, and working rapidly.

3. High electro-negative properties. This difficulty operates in two directions. The more negative a metal is the more easily it oxidizes and the more fixed its oxide. This gives rise at once to the points before mentioned regarding the difficulty of removing oxide. It, however, gives rise to other and quite as serious after-effects ; namely, it intensifies the galvanic action arising at the joint and causes it to weaken more rapidly. Every soldered joint, if moistened with a corroding liquid, forms a true galvanic couple, in which the most electro-negative metal is attacked most. It therefore follows, that the further removed the metal and the solder are in the electro-chemical scale, the more intense will be the galvanic action.

Aluminium is the most highly electro-negative metal in common use. Its oxide is very nearly the most fixed oxide known ; it oxidizes instantaneously when exposed to the air (although to a microscopic thickness) and in a galvanic couple it is electro-negative to all the ordinary metal excepting magnesium. There is, therefore, particular danger to be apprehended that aluminium soldered joints will corrode and fall apart, even if moistened by nothing more than the ordinary atmospheric moisture. It would also follow from these observations that the solder which would form the weakest galvanic couple with aluminium must be largely composed of metals close to it in the galvanic series—such in particular as zinc.

We have reviewed the three properties which render a metal difficult to solder easily and permanently ; we have seen that in each respect aluminium shows itself as a very intractable metal. We are, therefore, in a position to understand why it was that when aluminium was first made in quantity, in 1856, the Parisian metal workers quickly discovered that all the ordinary methods of soldering were quite useless with it. They bore witness to the fact that ordinary solders dropped from it literally like water from a duck's back, and it appeared as if the future usefulness of the new metal was to be seriously impaired by this unforeseen difficulty. The Societe d'Encouragement promptly offered a large prize for the successful solution of the problem, and awarded it later to Mourey, one of the most renowned of the Parisian goldsmiths, whose solders came the nearest to being satisfactory.

Before enumerating, however, the various alloys which have been proposed for this purpose, let us review briefly the points which constitute a *satisfactory* solder. They are, indeed, more numerous than might be expected, and their enumeration will apprise our readers of the difficulties involved in the question.

1. The solder must not be too hard to fuse. It must, of course, be more easily fusible than the metal to be soldered, and, in general, the more easily it melts the better.

2. The solder must alloy easily with the metal to be soldered ; in common trade parlance, it must *bite*. The fundamental principle of soldering is that the melted solder alloys with the metal for a short but appreciable thickness, and thus gets its hold. Some metals alloy very quickly, others with great difficulty, and this excludes certain metals from solders used on certain other metals. Lead, the main constituent of common solder, does not alloy at all with aluminium.

3. The solder must be tough. A brittle alloy will, of course, make a brittle joint. The solder should be, if possible, as strong as the metal to be joined, or as near so as it can be made. Aluminium can be soldered with ordinary zinc, but the joint is to brittle to be satisfactory.

4. The solder must not disintegrate. Many soldered joints look perfect when first made, but literally fall apart of themselves after a short time. It is hard to distinguish here between the disintegration of the solder *per se* and the effect of galvanic action corroding the joint. There are certain alloys which are tough when first made, but crumble to powder on standing in the air. Galvanic action would probably accelerate such a process, but it can also disintegrate at the joint a solder otherwise a permanent alloy. As an example : tin containing 10 per cent. of aluminium, or even less, is tough and malleable, but quickly crumbles to powder in the air. Aluminium can be soldered with such an alloy or even with pure tin, but in either case the alloy of aluminium and tin crumbles and the joint falls to pieces. The effect of galvanic action cannot be altogether overcome, but may be mitigated by having the constituents of the solder as near as possible in the galvanic scale to the metal to be soldered.

5. The solder should be of the same color as the metal to be joined, and should not discolor with age. There are purposes where these limitations do not exist, but for doing any good piece of work the solder must fill these conditions. The discoloration on standing is

due to disintegration, oxidation or galvanic action, and is a very difficult point to overcome, particularly with aluminium joints.

6. The solder must not be too expensive. Silver, for instance, is a useful addition to most solders, improving their working qualities in many respects, but the use of more than a very small amount is usually out of question.

Mourey's first solders were simply zinc containing 6 to 20 per cent. of aluminium to toughen it. Then, by using fluxes, the solder could be made to hold; the joint generally kept its color well and was moderately strong. These alloys had rather a high melting point and required considerable skill to use satisfactorily. Mourey made them still stronger by adding 2 to 8 per cent. of copper, but these alloys did not keep their color so well as the first, and were, indeed, far from satisfactory.

It is safe to say that, until quite recently, the problem remained about as Mourey left it in 1860, and as late as 1890 we find a writer saying: "The want of a suitable solder for aluminium has greatly retarded its use in the arts." It is true that many attempts had meanwhile been made.

Colonel Frishmuth recommended an alloy of zinc and tin to which some aluminium, copper and silver had been added.

Schlosser gives as a hard solder an alloy of aluminium, with silver, gold and a little platinum.

Thowless patented an alloy of tin and zinc, with a little aluminium and silver.

Sellon patented the use of an alloy of zinc, tin and lead. The last ingredient would render this solder useless.

Bourbouze recommended an alloy of 45 parts tin to 10 aluminium. We have seen that this solder makes joints which fall to pieces of themselves in a short time.

Two years later, Heaton patented in England the use of an alloy of 45 tin to 11 aluminium. O, vagaries of the patent office!

Novel made the interesting discovery, in 1893, that pure tin would solder aluminium, and showed work done with it to the French Academy. It is probable, however, that every joint thus made, a year ago, has already tumbled to pieces in the museum of the Academy.

Several inventors have proposed using cadmium in alloys in place of zinc. The writer's experience has been that cadmium is in no place superior to zinc in any of the solders tried, and since it costs about thirty times as much, its use is hardly to be recommended.

Rather more promising have been the attempts to get over the difficulties by first electroplating the edges of the aluminium with a metal easier to solder, such as copper, and then joining the edges with ordinary solder. The particular danger is that the sudden heating during soldering may cause the electro-deposit to scale off. These attempts were never entirely satisfactory, and have been entirely abandoned since more efficient direct solders have been discovered.

An American inventor, also one in Germany, patented the use of silver chloride as a flux in soldering aluminium. The aluminium is attacked by this substance, and the silver set free alloys with it and produces a good surface for any good solder to take hold. The use of this flux has been measurably successful, but its costliness will always limit its application to small work, such as jewelry.

Otto Nicolai, of Wiesbaden, Germany, recommends cadmium chloride as a flux. The Aluminium Actien Gesellschaft in Switzerland state that its use is quite satisfactory in blowpipe work. Experiments made with it by the writer shows that it is a very deliquescent salt, rapidly absorbing moisture from the atmosphere, and when thus moistened it becomes entirely useless for its purpose. It must, therefore, be kept in a closely-stoppered bottle, and used immediately on taking out. Such impediments limit very much its usefulness, and it cannot be styled as an entirely satisfactory flux for the purpose. Still, its use is a step forward in the solution of the problem.

The Alsite Aluminium Solder, made in New York, is used only in blowpipe work. Its composition is not divulged, but its melting point is rather dangerously near that of aluminium, add it requires skillful workmanship to use it. At a recent exhibition of its use before the Franklin Institute, in Philadelphia, some very satisfactory work on small articles was done before the audience, and of a quality which could hardly have been improved upon. Whether the joints will disintegrate by galvanic action, time alone can tell; the proprietors claim that they will not. The very high price charged for this solder militates against its usefulness.

The only solder for aluminium which has attained to any extensive use, and which may be said to be the most successful thus far invented, is that of Mr. Joseph Richards, of the Delaware Metal Refinery, Philadelphia. Mr. Richards found that by adding a small percentage of *phosphorus* to the best solders hitherto used, they were invariably improved, the particular point of advantage being their increased ability to bite on the aluminium. The best alloy thus prepared contains zinc, tin, aluminium and phosphorus, the two first constituting the bulk of the alloy, and being united in their chemical equivalents as a true alloy. This solder can be used before the blowpipe or with a soldering iron. In the former case, a little silver can be added to it without making it too hard to melt, and giving it a better color. For use with the copper bolt, this solder leaves little to be desired. The surfaces to be united are first scraped clean, and then tinned with the solder itself by rubbing it on hard with the bolt. The prepared edges are then soldered together with ease, using a hot iron and no flux of any description. This solder has been adopted for over two years by the Swiss Aluminium Company, the largest manufacturers of aluminium, and by the largest makers of aluminium goods in America.

While nothing terrestrial can be said to be so good that no better could be wished, yet, in view of the improvements in soldering aluminium made since 1890, it may reasonably be asserted that a satisfactory solution of the problem has been reached.

## IN HONOR OF HORACE WELLS.

We trust the profession of Dentistry will not permit the effort which is being made to erect a bronze statue in the National Capitol, to the Honor and Memory of Horace Wells, the true discoverer of Anæsthesia, to pass by unheeded. His discovery is so Great, his charity so Divine, the gift of his thought so Unselfish, that no one who has a spark of manhood and love for his fellow-beings can afford to let this opportunity pass without contributing to this object in which all should combine.

Dr. J. D. Thomas, the Treasurer and Chairman of the Central Executive Committee, No. 912 Walnut St., Philadelphia, Pa., will receive contributions in any amount to this laudable object, and will issue a receipt for the same.

A full list of the names of contributors is designed to be embodied in the pedestal of the memorial statue.—Ed.

## BIRMINGHAM DENTAL COLLEGE.

The second annual commencement exercises of the Birmingham Dental College were held at Seals' Academy of Music, Birmingham, Ala., Thursday evening, March 28th, 1895.

The address to the class was delivered by Capt. Joseph F. Johnson, President of the Board of Trustees.

The number of matriculants for the session was twenty-four. The degree of D.D.S. was conferred on E. A. Wilson, Alabama, by T. M. Allen, D.D.S., Dean.

## DENTAL SOCIETY.

### EAST TENNESSEE DENTAL ASSOCIATION.

Organized, 1867. Twenty-eighth Annual Meeting at Harriman, Tenn., June 11th, 1895. Officers: President, Dr. F. A. Shotwell, Rogersville; Secretary and Treasurer, Dr. Geo. O. Brause, Harriman; Chairman of Ex-Committee, Dr. W. F. Fowler, Greenville.

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## BOOK NOTICES.

THE CONNECTICUT QUARTERLY. An Illustrated Magazine devoted to the Literature, History and Picturesque Features of Connecticut. Published by the Connecticut Quarterly Company, 66 State Street, Hartford, Conn.

The first number of the first volume of this magazine is before us, with the most interesting contents, as well as profuse and artistic illustrations Among them we find a most interesting "History of Anæsthesia," by Dr. Jas. McManus, of Hartford, illustrated by portraits of Dr. Wells, Dr. Colton, Dr. Riggs, the home of Wells where the first operation under Anæsthesia was performed, the statue erected to Dr. Wells in Bushnell Park, the medalion erected in Dr. Wells' honor designed by E. S. Woods, with portrait of the designer, all of which we republish in this issue through the courtesy of the publishers.

To such as desire to have a momento of the past, with the portraits of those who took the initial steps in this great boon to humanity, they could not do better than by writing to the publishers to secure a copy of this magazine.—ED.

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CATCHING'S COMPENDIUM OF PRACTICAL DENTISTRY FOR 1894. B. H. Catching, D D S., Editor and Publisher, Atlanta, Georgia. C. P. Byrd, Printer, 1895.

In the contemplation of this work we see, as it were, a review of all the articles of note which have appeared during the past year. To one connected with the editorial duties of a dental journal, as we are, it is a worthy selection of the best and sweetest flowers made into a nosegay to regale the senses of those who have not the time to admire all yet are glad to have some one to select the best in this garden of dental literature.

Looking over the book, we see many of the very best hints, suggestions and practical articles, which the past year has put forth, made up into a compendium which is worthy of the author and the labor he has given to the work. The busy dentist is certainly under obligations to Dr. Catching, for thus selecting what is most worthy for him *to read*, *to try*, *to digest*, and *to impress on his memory*, in all the departments of dentistry.

The book is published at a cost of two and a half dollars, which is a reasonable price for the information it gives, and the number of valuable suggestions its pages contain.—Ed.

## THE PRACTICAL PLACE.

### Sole Leather Discs Polishing Fillings.

Dr. Brophy suggests the use of sole leather discs for polishing fillings, carrying powders for cleansing, etc. Small punches can be bought at hardware stores for punching them.—*Catching's Compendium.*

### Simple Band Matrix.

Cut a piece of German silver polishing strip long enough to go around the tooth, punch a hole in each end. Get a key ring, of the kind with abutting ends, and file the ends to points to fit the holes in the strip, pass the strip around the tooth, open the ring with clamp forceps, insert the points in the holes in the band, let the ring spring back which will tighten the band around the tooth and hold it in position.—*Catching's Compendium.*

### Erupting Third Molars—Treatment.

Cut or slit the gum over tooth, apply a small piece of moistened cotton with a slight sprinkling of tannin. Direct the patient to close the teeth and retain it in that position for one or two hours. After a day or two it will give no further trouble.—*Catching's Compendium.*

### Pulp Capping.

Where decay has nearly reached the pulp, excavate only the disintegrated tooth-substance; then line with cement composed 1 part aristol to 4 parts of ordinary nitro phosphate.

It is believed that the aristol, in contact with still living tissue, will exercise a stimulating and disinfecting influence. Fill over this as usual.—*Catching's Compendium.*

### Fungous Growth of the Pulp.

With the aid of trichloracetic acid, this growth can be readily removed. Apply the acid as often as necessary to destroy the growth, continue the application in the roots of the tooth, on shreds of cotton.

Repeated application of the acid will destroy the growth of the apex of the roots, which, after cleansing and drying are ready for filling.—*Catching's Compendium.*

### For Destroying Pulps.

| | | | |
|---|---|---|---|
| ℞ | Arsenious acid | 4 | parts. |
| | Morphine Mur | 4 | " |
| | Anti-Ramnia | 4 | " |
| | Cocaine | 3 | " |

Carbolic acid, q. s., to make a paste.

The writer says, pure wood creosote confined over the pulp for twenty-four hours will facilitate its removal whole.—*Catching's Compendium.*

### Removal of Devitalized Pulps.

After removal of arsenic, wipe out with fresh solution of dialized iron, and place in the cavity a small pellet of cotton saturated with a saturated solution of tannin in glycerine, seal it with gutta-percha. After ten days the pulp may be removed whole without pain and without hemorrhage.—*Catching's Compendium.*

### Softening Modelling Compound.

To soften modelling compound for impression taking, place it in a vessel with cold water, and heat both together. This softens the compound evenly throughout.—*Catching's Compendium.*

### Accurate Modelling Compound Impression.

In speaking on the subject of modelling compound for impressions, Dr. Jewill says the most accurate way of making impressions of partial cases with this material, is to remove the impression from the mouth after it is partially taken, and soften the surface of the compound over a flame, replace it in the mouth and press firmly to place, allow to cool and remove.—*Catching's Compendium.*

### To Make Pin to Exactly Fit the Root.

Take a piece of orange or pine wood and whittle it as near the shape as possible, and drive it into place with the gold plugging mallet, then remove the same and wrap around it a thin ribbon of platinum, insert it into the root and give it two or three taps to make it conform exactly to the shape of the stick, then remove both from the tooth, and remove the stick from the platinum, which leaves a core that may be filled with any hard material, such as clasp metal, eighteen-carat gold, copper, or whatever you choose, being careful to protect the outer surface with a solution of whiting to prevent the metal flowing on the outside. This gives a dowel or pin which exactly fits the root, and upon which any sort of crown best for the case can be built.—*Catching's Compendium.*

### HYPODERMIC ANÆSTHETIC.

The following formula gives a hypodermic mixture, safe and effective, from the use of which, so far, no injurious or untoward results have supervened. Painless amputation of the finger, painless excision of a portion of a rib, and numerous other operations of minor surgery, unattended by pain, attest its value :

| | | |
|---|---|---|
| ℞ | Sulp. Atropin | gr. 1-2 |
| | Strophanthin | gr. 1-5 |
| | Acid carbolic (95 per cent.) | grs. 5 |
| | Hydro chlor., cocaine | grs. 20 |
| | Aq. dist., q. s. | fl. oz. 1 |

M. Sig. Four to six drops hypodermically, for local anæsthesia.

A. C. HEWETT.

From the Clinical Report of the First and Second districts Dental Societies of New York, we make the following extracts :

"The new remedy Iatrol was introduced. It is extremely interesting in general operation in oral and dental surgery. It has strong antiseptic properties. It is non-toxic and analgesic. It is believed that it will be a valuable addition to tooth powders. It is easily soluble in warm water and in the essential oils. Macerated in oil of peppermint, in massage treatment of the gums, it is very beneficial."

DR CHARLES A. MEEKER, Newark, N. J., has great success in bleaching discolored teeth with 25 per cent. pyrozone. The tooth he bleached had a filling of amalgam, extending on the palatal surface from under the gum line to near the incisive edge, requiring nearly an hour to remove, leaving a thin labial shell. The tooth was very black. The bleaching required forty-seven minutes. The method was as described in July *Cosmos*, 1894. This consists of first removing all carious matter, placing the rubber dam on the tooth to be operated upon and on the two contiguous teeth ; then to apply ammonia water and wash thoroughly with the same. Then use the twenty-five per cent. pyrozone in the cavities and outside, rapidly evaporizing the pyrozone either by hot or cold air blasts, and so continue until the required whiteness is obtained. The length of the treatment varies from nine to forty-seven minutes, and during the past eighteen months in which Dr. Meeker has been using pyrozone for bleaching, he has had great success, the teeth so bleached remaining in good condition. * * * *

Dr. M. L. Rhein considers the best germicide for the treatment of putrescent root canals is the bichlorid of mercury in a solution of peroxide of hydrogen. After this treatment he seals the root with a silk thread impregnated strongly with the oil of cinnamon. * * * * —*Dental Cosmos.*

### Local Anæsthetic.

Add fifty drops of water to two grains of Hydrochlorate of Tropa caine, make a series of hypodermic injections around the tooth to be extracted. Ten drops of the solution are injected. Employ one minute in injecting the dose. Dr. Hugenschmidt regards two-thirds of a grain in fifteen drops of water sufficient for ordinary extractions, but for difficult cases he advises four fifths of a grain to a similar amount of water in order to produce complete anæsthesia. He considers it much less dangerous than the hydrochlorate of cocaine.

### Salol—As a Root Filling.

Salol is highly spoken of as a root filling, many eminent practitioners claiming favorable results with it, which other materials used for the same purpose failed to secure. It melts at a low temperature, 104 F.—at the temperature of hot water or of tea or coffee which is taken in the mouth. It is conveyed to the roots of upper teeth on broaches and held there with gutta percha points, or it is melted within the root by carrying a hot broach in the root and thus fusing it; or it may be mixed with by mixing with Phosphate of Zinc filling material and thus filling the root. In lower teeth which are so much more difficult to treat, it is more easily used, being carried to the roots of these teeth, melted in the roots with warmed broaches and afterwards filling the crowns. It was suggested to the profession by Dr. Mascort.

### A Useful Hint.

I replaced a contour filling in my own mouth several years ago by the following method, and the filling is still intact, though it is a central incisor, with but little chance for retaining grooves; I put on rubber dam, cleaned the cavity well and partly filled with thin cement, pressing the old gold filling in place, and left till thoroughly set. Since trying the one in my own mouth, I have replaced others, and find them very durable. Sometimes it happens that a large contour gold filling may be displaced in the finishing-up process, which is certainly very discouraging to a dentist after hours of hard work and use of much gold. Sometimes they may be cemented into place, and be fully as durable as if they had never been displaced. As the gold exactly fits the cavity, no line of cement is seen. And the work is much more perfect than any other kind of inlay can be; and what a world of work it sometimes saves, to say nothing of the gold required in refilling.—*J. E. Davis, B.S., D.D.S., Columbus, O.*

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### FOR FETOR OF BREATH (WITH STOMATITIS).

| | | |
|---|---|---|
| ℞ | Liq. sodii chlor. | ℥ iss. |
| | Dec. cinchone flav. | ℥ v. |
| | Millis rose | ℥ iss. |
| | Spr. caryophylli | ♏. iv. |

M. Sig.—Mouth wash. *D. M. Sabater.*

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### PRESS BACK THE FESTOONS.

Whenever gutta percha is temporarily placed between the teeth for any purpose in the management of proximate cavities, there is one important item in its manipulation that should never be overlooked. As commonly used it is merely pressed down into the cavity with little attention to the form that is given it. The temporary purposes for which gutta percha is ordinarily employed are the following: To seal medicaments in the cavity during treatment, to maintain space between the teeth until the soreness passes away after wedging, and to press back the gum which may have grown into the gingival portion of the cavity. All these are laudable objects but much harm may be done to the gum septum by the careless use of gutta percha in this manner. The point to which we wish especially to call attention is this: When gutta percha is placed between the teeth for these purposes it should invariably be made to extend broadly over the gum septum buccally and lingually, with the object of pressing back the festoon to a level at least, with the portion lying immediately between the teeth.

There are two important things to be gained by this procedure. First the festoon is held out of the way so as not to interfere with the operation of filling. If the festoon be allowed to extend to its normal position while the proximate gum septum is pressed back it will result in the festoon standing up more prominently than the septum and this prevents the easy adjustment of the rubber dam. It also interferes with the use of strips, files, discs or other appliances in finishing the filling. The festoon is often seriously lacerated in the attempt to trim down a filling, and this can all be avoided by pressing the festoon out of the way.

The second point to be gained is even more important. The normal form of the gum septum is that of an arch with its highest point midway between the teeth. This prevents the lodgment of food in the interproximate space on account of the sloping away in both directions of the gum tissue. If this arch is inverted by pressing gutta-percha into the interproximate space to the gingival outline of the cavity it results in a pocket between the teeth into which food will wedge immediately after the filling is inserted. The festoons standing so prominent tend to hold the food between the teeth, and this prevents to a serious extent the return of the gum septum to its normal position. If the festoons are pressed well back on the necks of the teeth, food will not readily wedge into the interproximate space, and the gum will creep up to its normal form and position in an astonishingly short time.

We commend this matter to the consideration of those who have not tried it. They will find that the operation will be much facilitated and the gum septum left much healthier.—*Ed. Review.*

## MATRIX FOR PROXIMAL CAVITY WHEN THE ADJOINING TOOTH IS MISSING.

Fill the space with modelling compound; warm the metal matrix and press it in between the tooth and the mass.—*B. H. Catching.*

TO CLARIFY wax, melt in hot-water bath; then remove from water bath and bring to a slow boil on the stove. Into the boiling wax break a fresh egg, and stir three or four minutes till the egg is thoroughly cooked. Strain through a piece of cheese cloth, to remove all pieces of egg, and you will have your wax as clean and pure as when brought from the dental depot.—*J. E. Harvey.*

## PAINLESS DENTISTRY.

For the painless removal of pulp tissue Dr. Rose rubs small portions of cocaine in a mortar or on a glass with a single drop of carbolic acid, touching the exposed nerve with what can be carried of this solution on a nerve broach.

Dr. Hewitt accomplishes the same result with a paste of cocaine and glycerine. Use the glycerine in preference to carbolic acid; you can take that paste, apply it to the bare nerve if you can get to it, then follow it clear down to the apex, and you can remove it without pain.

Dr. Morrison, of St. Louis, believes that the use of morphine and cocaine have been abused in the painless extraction of teeth. It is a sacrilege to extract a tooth or a root that can be used in crown or bridge-work.

Dr. Pruyn advocates the open discussion of all the drugs in the materia medica that can be used in the intelligent practice of dentistry. He said:

Because some abuse them is that anything to me? I get sick and tired of a discussion where it is assumed that we are all ignorant tooth-pullers because some in the profession abuse it, when we use a drug and use it intelligently. Let us understand the uses of these drugs; and by experiment find what the abuses are and bring them out openly.

Experiments should be practiced on animals that the action might be better understood.

Dr. Hewitt's Compound Cocaine Pigment:

| | |
|---|---|
| Atropin | grs. $\frac{1}{1}$ |
| Stropanthin | grs. $\frac{1}{5}$ |
| Cocaine hydrochlor | grs. cxx. |
| Hydronapthol | grs. x. |
| Oleum carophylli | ʒ ij. |
| Chloroform | ʒ ij. |
| Oleum cassia | ʒ ij. |
| Glycerine | ʒ j. |

M. Sig.—Use locally.

This will be found a good local application, even in putting on the gilling twine, or in working the rubber up under the gums.

I have used this pigment for a long time on all sorts of patients, on patients with heart disease, with kidney-trouble, with one side paralyzed, and brain trouble, and every conceivable disease that has come into my office, and so far as I know, without the slightest toxic effect. Why? Because enough of it cannot be absorbed in the way I use it to enter into the circulation; if it were all put into the stomach at once it would not hurt a baby.

### Removal of Overhanging Gum on Third Molar.

Burn away with trichloracetic acid. No hemorrhage or subsequent soreness.—*R. Ottolengui.*

Should pulpitis ever set in within a year, instruct the patient to report *immediately*, *not* after some hours, but *immediately;* and then commence the aconite treatment, and in the large majority of cases a *complete victory* will be gained over the irritable pulp.

THE

Dental Office and Laboratory.

FOURTH SERIES.

VOL. IX. PHILADELPHIA, SEPTEMBER, 1895. No. 5.

# YOUNG DENTISTS AND THEIR CHARGES.

BY THEODORE F. CHUPEIN, D. D. S., Philadelphia, Pa.

We have a word of advice to young dentists about to begin their professional career. It may be that your work is quite as good, equally well executed as your older brother who has an immense practice and whose fees are exorbitant, but it does not follow that your fees should be based on his or even to approximate to them by a very wide margin.

A young dentist just starting must make up his mind that he has to do a *large* amount of work for a very *small* amount of money. It may seem unjust when you have labored hard, for two or three hours, over a difficult filling, and can congratulate yourself when it is finished that it is well and faithfully done, that you should only receive for your three hours of skill and labor what Dr. So and So has made in fifteen minutes. Yet you must remember that perhaps Dr. So and So in the commencement of his career got no more for his work than you get now. Remember there is no Royal road to Learning—the Prince and the Peasant have to labor the same to acquire knowledge; and to gain the top you must begin at the bottom round of the ladder.

It is not long since a patient presented to have some work done. I noticed she had a very large contour gold filling in the left upper central incisor, which must have taken the operator three hours to accomplish—besides this there was an ordinary gold filling in the mesial face of the right central. Three amalgam fillings in some of her other teeth, and a vulcanite plate carrying the left upper lateral incisors, all of which work—which was well done—the patient informed me she paid the young dentist nine dollars for. This was very cheap, for the contour filling was worth at least six dollars (and cheap at that), the other gold filling at least three dollars, the amalgam fillings one dollar each, and the plate would have been cheap at four dollars—thus this young dentist had done sixteen dollars worth of work (which would have been cheap at that price) for nine dollars. Nevertheless I felt he was on the right track and some day he would reap the reward of the care and skill which his work evinced.

There is an old saying that "Cheap work is poor work." But the young dentist must reverse this saying, and he must make his work good, although he gets poorly paid for it. The young dentist cannot afford to make failures. Every piece of work he does must be as carefully done, regardless of the time he spends over it, as if he was to receive a large fee for it. An old practitioner may make failures, and his patients will overlook the failure, and find an excuse for his fault. Not so with the young dentist. Every failure he makes is laid to his account and strongly militates against his ultimate success.

There are some operators who will advise differently, saying that as you start so you should finish. That if you have to make your mark you had better set a high value on your acquirements from the beginning. That if you work cheap you will be thought incompetent, and that the opinion the public has of your abilities will be regulated by your fees. This is "Spread Eagle talk," and the sooner the large number of young practitioners disabuse their minds of such reasoning the better. It is true that when a son or younger brother falls gradually in the practice made by his father or brother the case may be different. Or where a young man having merit and a large circle of rich and influential relatives, friends, and acquaintances the case may also be different. But where you see *one* opening of this kind you will see *fifty* of the other kind, so that the latter advice holds good in the proportion of one to fifty and more probably one to a hundred.

We would therefore advise all—or nearly all—young practitioners to begin by accepting and working for very modest fees, and if they have the true grit in them and do their work well despite the paucity of the fee, they are bound, in the long run, to make their mark and reach the goal.

## PERMANENT STERILIZATION OF CONTENTS OF INACCESSIBLE ROOT CANALS.

Place over the mouth of root canals a crushed pastil consisting of

| | |
|---|---|
| Hydrarg. bichlor | 0.004 grams. |
| Acid thymic | 0.006 " |

An insoluble albuminate of mercury is formed by the action on the remnants of the pulp, forming a germicide of considerable power.—*Southern Dental Journal and Luminary.*

[TWENTY-SECOND PAPER ]

# LEADING QUESTIONS AND ANSWERS FOR DENTAL STUDENTS.

BY THEODORE F. CHUPEIN, D.D.S., Philadelphia, Pa.

Q. What is the principle of filling teeth with non-cohesive gold?

A. The wedging principle.

Q. What do you mean by the wedging principle?

A. I mean that the gold is forced or wedged into the cavity in such a way that it cannot drop out.

Q. Can you describe how this is done?

A. The cavity into which the gold is to be put must be slightly larger within than at the orifice; the cavity should have paralatel and entirely circumscribed walls, and if shallow should have well defined groves or under-cuts. If a rope of gold is used, the end should be placed at a point in the cavity, or in the groove, where it will remain fixed until a loop or fold of the gold can be taken with the plugger or packer and packed on this. This fold should extend two-thirds in the cavity and one-third out the cavity. Fold after fold is thus made, always pressing on the former and in the same direction until the cavity is filled. A slightly bent wedge-pointed plugger is now forced in the center of the filling down to the bottom of the cavity and the gold forced from the center towards the circumference, and this new cavity increased in size as much as it can be by this manipulation. A pellet of gold is introduced into this newly made cavity and it is condensed well into the filling. This manipulation is continued at different points of the filling and each new cavity filled with new pellets. When the gold has been introduced, the part which protrudes from the orifice of the cavity is gathered up with suitable pluggers and the excess is forced, as much as possible, into the cavity, beginning first with larger, and continuing with smaller and smaller pluggers until the filling is made uniformly dense. When no impression or pits can be made in any part of the filling with a small plugger, especially at its cervical margin, should the filling be in the proximate surface of the tooth, a burnisher may now be used to render it uniformly level, and should this be impracticable from its density, all protruding gold should be carefully dressed down flush with the borders of the cavity, when it may be nicely smoothed and burnished.

Q. Suppose instead of a roll or rope of gold you should use pellets how would you proceed?

A. The procedure is almost precisely the same. One pellet after another is introduced, leaving a certain quantity to protrude from the cavity until it is filled, when it is perforated in the center as before described and the filling completed as related above.

Q. Is there any way of preparing the gold for such cavities?

A. The size of the cavity will be a guide as to the size of the rope or pellets that have to be used. The sheet of gold, if used in the rope form, is cut into quarters, halves, or thirds, and rolled into a rope with the fingers, or with a foil crimper. If used in pellets, the foil is cut into little squares and formed into pellets of different sizes.

Q. What do you mean by a foil crimper?

A. It is an appliance for forming the foil into ropes so that it may not be touched by the hands. It consists of two pieces of tin plate, a little larger than a sheet of gold foil, having one edge of each turned up at right angles about the one-thirty-second of an inch. The piece of gold foil is laid smoothly on one of these pieces of tin plate and with the other piece the foil is crimped on itself, and thus formed into a rope.

Q. Is the rope or pellet the only form in which the gold is used for filling?

A. No. Some operators prefer it formed into a ribbon.

Q. How is it formed into a ribbon?

A. The sheet of foil is cut of a size suitable for the case in hand, when it is laid on a flat cushion or piece of soft spunk covered with a napkin. With a foil spatula, or dinner knife, the foil is pressed in the center of its sheet diameter, when it rises on each side of the spatula; this makes one fold of *two* thicknesses. It is pressed again when it makes *four* thicknesses. This manipulation is continued until a ribbon is formed of the desired number of folds and desired width.

Q. How is the ribbon used?

A. In the same way as the rope.

Q. Are there any other ways of using non cohesive gold?

A. Yes, in the cylinder form.

Q. How is this done?

A. The cylinders are used like the pellets, and are introduced into the cavity like so many cigars in a tumbler, when the perforations are made and new cylinders introduced until the cavity is filled densely.

Q. How are the cylinders formed?

A. The foil is made into a ribbon as above described, when one end of the ribbon is placed by the fingers of the left hand on the end of a five sided broach held in the right hand. The broach is rotated and the ribbon of gold is folded on itself until it is made into a cylinder, larger or smaller as they are wanted.

Q. Is there any other way of using non cohesive gold foil for filling teeth?

A. A plan has been proposed to use it in the stellate form. This consists of cutting pieces of the ribbon or gold in different lengths, from one quarter to three-quarters of an inch long. These pieces, three in number, are laid on a piece of erasing rubber, in the form of a star. Several stars of ribbon foil are thus prepared and laid on the rubber. A large faced plugger, about the size of the cavity, is placed at the intersection of these stars, and the gold ribbon pressed by the plugger into the rubber. This causes the ends of the star to fold themselves on the shank of the plugger. It is thus carried to the cavity, and pressed in place, which leaves the ends of the star resting without the cavity. Another and another star are thus used, by employing a plugger a little smaller at each introduction, and when nearly filled a pellet or more is placed in the center of the filling and the overhanging ends of the star folded in and pressed into the filling. This style of filling did not meet with general favor, as it was principally adapted to cavities in the crown surfaces of the molars and as the preparation entailed trouble without offering better results than the rope, ribbon or pellet form, it was not often used.

Q. What is the principle of using cohesive gold?

A. By welding.

Q. How are the points of the instruments made which are used for working gold in the cohesive form?

A. With serrations.

Q. Does not this style of gold lose its cohesive nature?

A. It does, but this may be restored to it by the application of heat.

Q. What is an absolute necessity in the use of cohesive gold?

A. Absolute dryness.

Q. How is this best secured?

A. By the Rubber Dam.

Q. Should moisture invade a filling while being introduced by the puncture of the dam or any other cause, can it not be dried and the work continued?

A. There would be no certainty in such an attempt.

Q. What then would you advise under such circumstances?

A. To begin all over, even to the re-application of the dam unless it were found that the leak could be effectually stopped.

Q. When the cavity has been filled what has been recommended as a final measure in the introduction of gold?

A. To burnish a piece of heavy foil, say from 15 to 20 thickness, over the entire filling.

Q. When the filling has proceeded thus far what is the next procedure?

A. To finish it. This means to file, cut, grind and polish it, so as to restore the contour of the tooth, reduce all overhanging portions of the filling and leave a smooth, even, and highly polished surface to all parts of the filling.

Q. How is this accomplished?

A. With small corundum points, or fine cut burs, corundum disks, sand paper disks in the dental engine and with files, emery and crocus strips in the fingers.

Q. Is not cohesive gold difficult to condense?

A. If the attempt be made to use it in large pieces it is difficult to condense by hand pressure.

Q Are there any other means of condensing gold except by hand pressure?

A. Yes, it may be condensed by mallet force, by the automatic mallet, the electric, pneumatic, or mechanical mallet.

Q. Who first advocated mallet force?

A. Dr. W. H. Atkinson.

Q. What points of superiority did he claim for mallet force over hand pressure?

A. That the gold was more thoroughly condensed, and the welding of the foil more intimate. That there was not the danger of the instruments slipping when mallet force was used. That the gold could be anchored in its position in the cavity with greater care, and that the use of the mallet was not more disagreeable than hand pressure.

Q. What was the outcome of this suggestion of Dr. Atkinson's?

A. The invention of a number of automatic and other mallets.

Q. Which are the principal of these?

A. The Snow & Lewis, the Salmon's, the Taylor's, the late Prof. T. L. Buckingham's automatic mallet, and Dr. W. G. Bonnill's electric and mechanical mallets, and Dr. Holmes' engine plugger.

[TO BE CONTINUED ]

## AMERICAN COLLEGE OF DENTAL SURGERY.

COR. MADISON AND FRANKLIN STREETS.

The American College of Dental Surgery, of Chicago, moved last May from the quarters occupied by it on Wabash Ave., to a more commodious, well lighted, large building in the business center of the city. While the new quarters were in the act of having the improvements made for the college, a fire destroyed most of the building. Under ordinary circumstances this would be a terrible misfortune, but in this case, the property having been well insured, and the workmen not having made much progress, it enables the college to be rebuilt in ample time for the opening of the school in October. The fitting up of the college will be entirely new throughout, and the management is enabled, having the space practically clean, to arrange the various departments in an even more perfect manner than originally contemplated. It is believed that, when completed, it will stand unsurpassed as a dental college. The winter session will open early in October. For any information address

THEO. MENGES, D.D.S , Secretary.

## CHAPIN A. HARRIS MEMORIAL FUND.

*To the Dentists of the United States.*

BALTIMORE, May, 1895.

A movement is now in progress to insure a mortuary tribute to the memory of one of the greatest names in the annals of Dentistry. It is proposed to adorn his neglected tomb at Mount Olivet Cemetery with a monumental testimonial worthy of his name and fame.

Mr. Ernest W. Keyser, the talented Baltimore sculptor now in Paris, has modelled a remarkably faithful portrait bust of Dr. Harris and executed designs intended for a monument to be erected over his grave.

It is also in contemplation that should sufficient funds be realized a memorial tablet containing an alto relievo bronze bust of Dr. Harris be placed in both the Baltimore College of Dental Surgery and the Dental Department of the University of Maryland.

It is believed that the necessary funds can be obtained through voluntary subscriptions from the Dental Profession. The Snowden & Cowman Manufacturing Company of Baltimore has kindly consented to act as custodians of the "Harris Memorial Fund." Contributions are earnestly solicited and will be thankfully acknowledged. Address:

THE SNOWDEN & COWMAN M'F'G. CO.,
No. 9 West Fayette Street, Baltimore, Md.

## CHAPIN A. HARRIS.

### BIOGRAPHICAL.

Dr. Chapin A. Harris was born in 1806 at Pompey, Onandaga County, New York. He studied medicine, removed to Ohio and afterwards settled in Baltimore, Md., where he practiced Dentistry until his death in 1860. He founded and assisted in the organization of the first Dental College in the world—"The Baltimore College of Dental Surgery"—chartered in 1839. Was for many years its Professor of Dental Surgery. He edited the "American Journal of

Dental Science," the first of its kind ever published—1839 until 1858—and was a voluminous contributor to other Dental and Medical Journals. He was the author of "Principles and Practice of Dental Surgery," "Characteristics of the Human Teeth," "Diseases of the Maxillary Sinus," "Harris' Dental Dictionary," and edited "Fox's Natural History and Diseases of the Human Teeth," with additions, etc. These books were and are widely known to the civilized world.

In 1892 Dr. S. J. Cockerille, of Washington, D. C., delivered an address before the Virginia State Dental Society, from which the following excerpts are quoted: "The time arrived when dentistry demanded an honorable place among her sister sciences, and the Baltimore Dental College sprang into existence as the natural fruit of Harris' earnest and protracted labors." "He was the first to teach that the attainment of excellence in all things connected with dentistry is not only a high moral and personal duty but is likewise an obligation imposed by the community whose bounty is enjoyed." "Considered simply as a dentist Harris was a genius." "He devoted his life to the earnest study of medical and scientific literature." "It would be difficult to overestimate the value of the services which he rendered to the cause of higher education. Every lover of dentistry owes a distinct debt of gratitude to the man." "His rule of conduct was to keep his mind unbiased by theories and speculations; never to have any wish that an investigation should result in favor of this view in preference to that, and never to attempt by premature speculation to anticipate the result of investigations but always to trust to the investigations themselves." "Harris was a hard worker and devoted all the resources of his cultivated mind to further the welfare of his profession." "With the students he was punctual, truthful, straightforward, industrious and always kind." "In his family he was forbearing and loving to his children; to his wife he was the perfection of purity and devotion." "He was more than a dentist—he was a Christian gentleman."

"Honor his memory; keep it green in your hearts and hand it down to your children and children's children to the remotest generations, making the profession a blessing to them." "We expected the great State of New York to step forward and do justice to her noblest son; she failing we turned with anxious eye to his adopted State, the State that gave to the world its first Dental College, but we have waited in vain." "Let not the names of our great and useful men pass into oblivion."

## OBITUARY.

The death of Dr. J. J. R. Patrick has been a shock to the dentists of this country, where he was extensively known and appreciated. At nearly all dental meetings we had seen his name figuring in the discussions. He was endowed with ready speech and a clever mechanical ability; while his manner was at times brusque his reasoning was sound. His recent research on a large number of human crania evinces great industry, research, labor and perseverance. Men of his ilk cannot be well spared. *Requiscat in Pace.*—Ed.

### RESOLUTIONS ADOPTED BY THE ODONTOLOGICAL SOCIETY OF CHICAGO, IN REFERENCE TO THE DEATH OF DR. J. J. R. PATRICK, OF BELLEVILLE, ILLINOIS.

Whereas, death has removed from our midst Dr. John J. R. Patrick, of Belleville, Ill., and there has passed from the scenes of human activity a character whose labors have enriched the stores of science, a man who delved fearlessly and steadfastly into those mysteries of nature which call forth the most subtle energies of the human mind, and yield results, making the lives of succeeding generations happier; now, therefore, be it

*Resolved*, that in the death of Dr. Patrick the world loses an honored citizen-soldier, the field of science a conscientious, faithful laborer, and the dental profession a light whose extinguishment will kindle the profession's interest in the work he has accomplished for it, and thus extend and perpetuate his good influence. Be it further

*Resolved*, that to the family, friends and professional associates of Dr. Patrick, we extend the assurance that we appreciate the worth and are grateful that his life had been spared until it nearly completed the allotted time of three score and ten.

James A. Swasey,
Alison W. Harlan,
Louis Ottofy,
Committee.

## SILVER ANNIVERSARY OF THE NEW JERSEY STATE DENTAL SOCIETY.

REPORTED BY WM. H. TRUEMAN.

The Twenty-fifth Annual Meeting (the silver anniversary) of the New Jersey State Dental Society was held at the Auditorium, Asbury Park, N. J., August first, second and third.

The Auditorium is a large structure, elevated some twelve feet, the sides of glass, and sufficiently large to comfortable seat several thousand. It is situated directly on the ocean front, and in many respects is an ideal place for a dental meeting. Its accoustic properties are such that a good speaker from the platform can be heard in all parts of the hall when the hall is filled, but unless filled the reverberation interferes with this. It frequently has been filled and the audience held entranced until quite the close of the service or address. During the dental meetings a large portion on the sides and one end of the hall were occupied by exhibits, a portion only of the center being quite sufficient to accommodate those who gathered to hear the papers and discussions ; a very large gathering for a dental meeting, the largest I have seen ; yet it seemed small in so vast a hall. Very few dentists are orators, many forget the audience even when speaking from a platform, while in discussions on the floor, very few indeed seem to give any thought to making themselves heard. This, the roaring of the sea, the noise made by the constant movement outside, the movement of people in the hall, which could not be prevented, were serious drawbacks, many speakers failing to make themselves generally heard.

Promptly at ten o'clock, Thursday, August 1st, the meeting was called to order by the president, Dr. C. W. F. Holbrook, of Newark, and opened with the usual formalities. Owing to the Society having been unable as early as expected to get possession of the hall the previous evening, the installation of exhibits was not complete, and it was on this account thought best to adjourn the meeting until the afternoon.

The New Jersey State Dental Society and the American Dental Association meetings were held in the same hall, and following each other so closely, one after the other, made it practically a continuous meeting, and the hall offering excellent facilities for the display, prompted an extra effort and gave to this feature of the meetings especial educational value. The exhibits were on a much more extended scale than usual, and were alike a credit to the exhibitors and a compliment to the societies.

The S. S. White Dental Manufacturing Co. made a very fine display, pronounced by those competent to judge quite as good if not better than their exhibit at the Columbian Exhibition at Chicago.

Johnson & Lund's exhibit was quite large and a credit to the firm. Especial attention was called to the natural and bony appearance of their artificial teeth. As now made their teeth may be changed in shape by grinding on the exposed surfaces to any extent artistic taste requires, and the ground surface afterwards so polished that it cannot be detected. This is at times a decided advantage. In their exhibit

I noticed a neatly gotten up show piece made by Dr. Chas. P. Chupein, of Philadelphia. It is intended to illustrate different forms of crown and bridge work. An upper and lower cast, those portions corresponding to the gums and the roof of the mouth, made of pink wax, placed in a nickel plated articulator, nicely represented a mouth with vacancies requiring artificial substitutes. These vacancies were supplied with various forms of crowns and bridges. It was designed for use in the office to assist the dentist in explaining to his patient the advantages of crowns and bridges, and also the various forms of crowns in use.

The Oakland Chemical Co. exhibited their make of Hydrogen Dioxide, for which they claim a high therapeutic value, good keeping qualities, not liable to spontaneous decomposition, and general usefulness at a very moderate cost. As placed on the market it is of a strength suitable for general uses. If a stronger solution is desired it can be readily obtained in a short time by placing a quantity in an evaporating dish and applying heat, being careful not to let the heat exceed about 170°. If evaporated to half its bulk it becomes twice as strong. By this means a strong solution can be obtained quite free from the danger attending the etheral solutions.

The thought directed to make electricity useful to dental science is well shown by the numerous forms of electric motors designed to supplant the foot driven dental engine; the various devices to modify the commercial currents so that they may safely be used as substitutes for the battery therapeutically, and in the minor operations of the dentist, such a heating water, heating the hot air syringe, to illuminate the mouth, or to bake a set of continuous gum teeth. Each year this becomes more noticeable, and the improvements made by removing objectionable features and adding to the scope and usefulness of these applications seems to indicate that they may soon become essential to a well equipped dental office. This portion of the exhibit alone was well worth a long journey to see. Formerly the electrical exhibits would convey no information; to describe them briefly would make a volume.

I have not been able to make an extended report either of the meeting or of the exhibits, as I desired, but may do so for your next issue.

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## OBTUNDING SENSITIVE DENTINE.

Have the patient rinse the mouth well with dilute lime-water, not strong enough to be caustic. This forms a good application for the relief of sensitive dentine.—DR. WILLIAMS.

[Not Dental, but Very Interesting.]

# THE MOON'S STORY.*

By Sir Robert Ball, Lowndean Professor of Astronomy and Geometry at Cambridge' Eng. Formerly Royal Astronomer of Ireland.

I do not think there is any chapter in modern science more remarkable than that which I here propose to describe. It has, indeed, all the elements of a romance. I am to sketch an event of the very greatest moment in the history of this universe, which occurred at a period of the most extreme antiquity, and has been discovered in the most remarkable manner.

The period of which I write is far more ancient than that of the Pyramids of Egypt, or of any other monuments erected by human effort. It is even more early than that very remote time, hundreds of thousands of years ago, when man himself first came upon this globe. Our retrospect has to pierce right through those vastly protracted cycles which the geologists have opened up to us. We speak of a period long anterior to the ages during which our continents were being sculptured into their present mountain chains and river courses. We have to look through those periods still earlier, when great animals, long extinct, flourished on this earth. The time of which I write is more remote than that very remarkable epoch in earth history during which the great coal forests flourished. It is earlier than the supreme moment, countless millions of years ago, when living organisms first became inhabitants of this globe. Even here, however, our retrospect must not stop. We have yet once more to look back through certain anterior periods to a time when our earth was in its earliest youth. The chapter of history about which I am now writing is indeed in the very dawn of things terrestrial.

It might be thought that it would be utterly impossible for us to learn anything with regard to what took place at a time so immeasurably anterior to all sources of tradition, and indeed to all the ordinary channels for obtaining knowledge by observation. It, however, fortunately happens that the darkness of this early period is illumined by a bright and steady source of light which will never deceive us if only we will follow it properly. Our trustworthy guide is to be the pen of the mathematician, for it is well known that, unless we are going to dispute the fundamental proposition that two and two make four, we cannot impugn the truths which mathematics dis-

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*Communicated to the *Scientific American* by the author.

closes. This science knows no boundaries of space. It recognizes no limits in time. It is ever ready for discussing operations which take place either in the millionth part of a second or in the lapse of uncounted millions of centuries. The processes of mathematics are alike available for tracing out the delicate movements in the interior of a molecule not one-millionth part of the size of a grain of sand or for investigating the properties of space so vast that the whole solar system only occupies an inconsiderable point by comparison. Let us therefore see what this infallible guide has to teach us with regard to that momentous epoch in the history of our system when the moon was born.

Our argument proceeds from an extremely simple and familiar matter. Every one who has ever been on the sea shore knows the daily ebb and flow of the waters, which we call the tides. Long ere the true nature of the forces by which the moon acts upon the sea was understood, the fact that there was a connection between the tides and the moon had become certainly known. Indeed, the daily observation of a fisherman or of any one whose business was concerned with the great deep would have taught him that the time of high water and the time of full moon stood at each place in a certain definite relation. The fisherman might not have understood the precise influence of the moon upon the tides, but if he had observed, as he might in some places, that when the moon was full the tide was high at 10 o'clock in the morning, it would be perfectly obvious to him that the moon had some special relation to this ebbing and flowing of the ocean. Indeed, we are told of some savage race who, recognizing that the moon and the tides must be associated, were still in some considerable doubt as to whether it was the moon which was the cause of the tides, or the tides which were the cause of the moon.

The ebbing and flowing of the tide opens up this chapter in remote history, which we can now explore, mainly by the help of the researches of Prof. George Darwin. For, as the tides course backward and forward, sweeping to and fro vast volumes of water, it is obvious that the tides must be doing work. In fact, in some places the tides have been made to do useful work. If the water as it rises be impounded in a large reservoir, it can be made to turn a water wheel as it enters, while another water wheel can be driven as the reservoir empties itself a few hours later. Thus we produce a tidal mill. It is quite true that, so long as coal remains tolerably cheap and steam power is consequently readily available, it is not often possible to employ the direct power of the tides in an economical manner. For our purpose it is merely necessary to note that, day after day, week after week, year after year, the tides must be incessantly doing work of some kind or other.

Every practical man knows that a certain quantity of work can only be done by the expenditure of a certain quantity of energy. He also knows that there is in nature no such thing as the creation of energy. It is just as impossible to create out of nothing the energy which should lift an ounce weight through a single inch as it would be to create a loaf of bread out of nothing. If, therefore, the tides are doing work, and we have seen that they undoubtedly are doing work, it follows that there must be some source of energy on which the tides are enabled to draw. A steam engine is able to put forth power because of the energy developed from the coal which is continually supplied to the furnace. But where is the equivalent of the coal in the great tidal engine? We might at first hazard the supposition that, as the moon is the cause of the tides, so we must look to the moon to provide the energy by which the tides do their work. This is, however, not exactly the case. The match which lights the fire under a steam boiler is in one sense no doubt the cause of the energy developed; but we do not, therefore, assert that the power of the engine is derived from the match. It comes, rather, from the fuel whose consumption is started by the match. In like manner, though the moon's attraction causes the tides, yet it is not from the moon that the tidal energy is drawn. There is only one possible source for the energy necessary to sustain the tides. Every one who is conversant with mechanical matters knows the important duty which the flywheel performs in a mill. The flywheel, in fact, may be considered as a reservoir into which the engine pours the power generated with each stroke of the piston, while the machinery in the mill draws on this accumulated store of power in the flywheel. If the engine is stopped, the flywheel may yet give a turn or two, for the energy which it contains may be still sufficient to drive for a few seconds the machinery through the mill. But the store of energy in the flywheel would necessarily become speedily exhausted and the flywheel come to rest unless it were continually replenished by the action of the engine.

The earth may be regarded as a mighty flywheel which contains a prodigious store of energy. That energy is, however, never added to, for there is no engine available. If, however, no energy were withdrawn from the earth, then the globe would continue to spin round its axis once every twenty-four hours, forever. As, however, the tides need energy to get through their work, they abstract what they require from the store which they find at hand in the rotation of the earth. Next time you see the tides scouring up and down a river you may reflect that the power which impels that mass of water to and fro has been obtained solely at the expense of the spinning of our globe. Indeed, the little child who digs a moat in the sand, which is filled by the rising tide, affects, to a certain extent, the revolution of this earth about its axis.

This withdrawal of energy from the earth is incessantly taking place along almost every coast. From day to day, from century to century, from æon to æon, energy is daily being withdrawn and daily wasted, never again to be restored. As the earth has no other means of replenishing its stores, the consequence is inevitable. The quantity of energy due to the rotation of the earth must be gradually declining. Stated in this way, perhaps the intimation is not very alarming, but, placed in other words, the results at which we have arrived assume the more practical expression that the tides must be gradually checking the speed with which the earth turns round. The tides must, in fact, be increasing the length of the day. In consequence of the tides which ripple to and fro on our shore, and which flow in and flow out of estuaries and rivers, to-day is longer than yesterday, and yesterday was longer than the day before. I may, however, admit at once that the change thus produced is not very appreciable when only moderate periods of time are considered. Indeed, the alteration in the length of the day from this cause amounts to no more than a fraction of a second in a period of a thousand years. Even in the lapse of ordinary history, there is no recognizable change in the length of the day. But the importance of our argument is hardly affected by the circumstance that the rate at which the day is lengthening is a very slow one. The really significent point is that this change is always taking place, and lies always in the same direction. It is this latter circumstance which gives the present doctrine its great importance as a factor in the development of the earth moon system.

We are accustomed in astronomy to reason about movements which advance for vast periods in one direction, and then become reversed. Such movements as this are, however, not the real architects of the universe, for that which is done during one cycle of years is undone during the next. But the tides are ever in operation, and their influence tends ever in the same direction. Consequently the alteration in the length of the day is continually in progress, and in the course of illimitable ages its effects accumulate to a startling magnitude.

The earth now revolves on its axis once in twenty-four hours. There was a time, millions of years ago, very likely, when it revolved once in twenty-three hours. Earlier still it must have spun on its axis in twenty-two hours, while this succeeded a time when the day was only twenty hours. The very same arguments applied in those times which apply at the present, so that if we strain our vision back into the excessively remote past, we find the earth spinning ever more and more rapidly, until at last we discern on epoch when the length of the day, having declined to eight hours and seven hours, had at last sunk to something like five or six hours. This is the time when the moon's story commences. At this eventful period the earth accomplished about four revolutions in the same time that it now requires for a single one. We do not attempt to assign the antiquity of this critical moment. It must certainly have been far earlier than the time when this earth became fitted for the reception of organized life. It must have been at least many millions of years ago. If it be thought that the vagueness of our chronology is rather unsatisfactory, then it must be remembered that even historians who have human records and monuments to guide them are still often in utter uncertainty as to the periods during which mighty empires flourished, or as to the dates at which great dynasties rose or perished.

But our story has another side to it. Among the profoundest laws of nature is that which asserts that action and reaction are equal and opposite. We have seen that the moon is the cause of the tides, and we have further seen that tides act as a brake to check the speed with which the earth is rotating. This is the action of the moon upon the earth ; and now let us consider the reaction with which this action must be inevitably accompanied. In our ordinary experience we observe that a man who is annoyed by another feels an unregenerate impulse to push the annoying agent away as far as possible. This is exactly the form which the reaction of the earth assumes. It is annoyed by the moon, and accordingly it strives to push the moon away. Just as the moon, by its action on the earth, through the medium of the tides, tends to check the speed with which the earth is rotating on its axis, so the earth reacts on the moon, and compels the satellite to adopt a continuous retreat. The moon is therefore gradually receding. It is further from the earth to-day than it was yesterday, it will be further to-morrow than it is to-day. The process is never reversed, it never even ceases. The consequence is a continuous growth in the size of the track which the moon describes around the earth. It is quite true that this growth is a slow one, so too the growth of the oak is imperceptible from day to day, though in the lapse of centuries the tree attains a magnificent stature. The enlargement of the moon's orbit, though imperceptible from month to month or even from century to century, has revolutionized our system in the lapse of many millions of years.

Looking back through the mists of time, we see the moon ever drawing nearer and nearer to the earth. Our satellite now revolves at a distance of 240,000 miles, but there was a time when that distance was no more than 200,000 miles. There was a time, millions of years ago, no doubt, when the moon was but 100,000 miles away, and as we look further and further back, we see the moon ever drawing closer and closer to the earth, until at last we discern the critical period in earth-moon history, when our globe was spinning round in a period of about five or six hours. The moon, instead of revolving where we now find it, was then actually close to the earth, earlier still it was in fact touching our globe, and the moon and the earth were revolving each around the other, like a foot-ball and a tennis-ball actually fastened together.

It is impossible to resist taking one step further. We know that the earth was at that early period a soft molten mass of matter, spinning round rapidly. The speed seems to have been so great that a rupture took place, a portion of the molten matter broke away from the parent globe, and the fragments coalesced into a small globe. That the moon was thus born of our earth uncounted millions of years ago is the lesson which mathematics declares it learns from the murmur of the tides.

## SELECTED ARTICLES.

### AMALGAM.

The practice of dentistry involves so many arts and sciences. is composed of so many processes that are pleasing and alluring, it is perhaps not very remarkable that such a one as the manipulation of amalgam has not received more attention than has been bestowed upon it.

It would appear that in its early career, for reasons which are readily discernable, it established for itself a deservedly unenviable reputation, which even at this enlightened day has not been entirely eradicated, notwithstanding that it has proven its great intrinsic value, and probably saved more teeth than any other one material. Therefore, recognizing as I do its value. and appreciating the apparent neglect it has received at the hands of the profession, I have been led to record my views upon the subject.

With kindness for all and malice toward none, let us look at the facts as they daily present themselves. For an ordinary patient who calls for the first time we may find, say, a dozen fillings which have been inserted by some man of established reputation. A certain number of these are of gold, and a pleasure to look upon, while others are of amalgam, and do not appear to have been accomplished by the same hands. In all these years of my practice I have frequently seen and admired gold fillings, crowns, and artificial dentures to such an extent as to inquire the name of the gifted operator, and yet during all this time I have never once (or my memory greatly deceives me) been inspired to do the same upon the sight of an amalgam filling.

The latest catalogue of one of the largest dental supply houses of the world has listed six hundred and twenty-one different instruments for the packing of gold, and forty-seven for the packing of amalgam. Just think of it! Some fourteen times as many different patterns of instruments may be obtained for the manipulation of the one material as for the other.

There is no doubt in my mind that a great majority of the profession believe that the relative amount of skill required for the proper manipulation of the two materials might be well represented by that self-same ratio of six hundred and twenty-one to forty-seven, and that will probably account for the previous rather remarkable statement as to the result of my personal observation; but with this I must emphatically differ. That amalgam may be mixed to the consistency of putty and inserted into any cavity with little or no difficulty, is doubtless true, and no one will deny; but, mixed as it should be, dry and hard, to me its satisfactory insertion into a cavity, properly prepared, is a very much more difficult operation in many instances than would be the insertion of gold where that material was indicated.

It is not within the province of this paper to deal with this subject from any other than an entirely practical point of view. The method of the manufacture of alloys to be used for filling, and the very many different metals that might and do enter into their composition, could well form an ample theme in themselves, and for the time being must have no interest for us. My purpose is simply to detail—

1. My general opinion of the material, based upon fifteen years of its use and careful observations of the results obtained.

2. Where I consider the material to be indicated in my own practice.

3. The method employed in its manipulation.

While there is much to be said in favor of amalgam as a filling-material, it also presents some readily-to-be-perceived disadvantages, which at once stamp it as a material to be used not universally, but with discretion. Therefore, careful consideration should be given to both its advantages and disadvantages, the latter of which will be first taken up.

One of the objections, and without doubt the most serious one, to the use of amalgam is that perfectly uniform results are not obtained, even in the same mouth. This may be attributed to (*a*) the fact that different lots of the same brand of alloy may, and do, vary in their composition; (*b*) the fact that it is practically impossible to manipulate it in a uniform manner, and under the same conditions; (*c*) the process of crystallization may produce varying resultant masses, as it, itself, has undergone under varying conditions.

Owing to the method employed in their manufacture, the low fusing-point of their component metals, and the "personal equation" of the melter himself, which assuredly is an important factor, perfectly uniform results, year in and year out are not obtainable.

Most manufacturers will probably not uphold this statement, although in my own experience I have had one house practically repudiate the products of its own hands. Thomas Fletcher, of England, than whom probably no one has spent more time upon the subject of these alloys, frankly admits this point, and even states that the opposite edges of a shilling may give different results upon assaying, while they are coined with the greatest precautions possible. He now states that after many years of experience in the matter and backed up by every possible means for working with precision, it is impossible for him to produce uniform alloys, and I think we can in all fairness take it for granted that what is impossible for him to accomplish in that line cannot be done by others. So I think we may safely conclude that one of the causes of the varied results obtained with amalgam fillings is due to the alloy itself.

The fact that it is impossible to manipulate amalgam in a uniform manner and under the same circumstances must be patent to all, and consequently perfectly uniform results cannot be expected.

The fillings appear at times to amalgamate much more freely than at others, and so a uniformly plastic mass cannot always be produced. In certain cases it can be used so hard as to powder under the packing instrument, while in other cases it must necessarily be more plastic in order to be manipulated as desired.

So, therefore, all these conditions may affect the amalgam fillings.

The process of crystallization, to which is due the hardening of the plastic material, is one of nature's subtle phenomena which, while it must create admiration, is surely incomprehensible.

If a mixture of certain definite proportions of an alloy and mercury be made, and the same be allowed to crystallize under the varying conditions that present in the mouth, it would be perfectly rational, I think, to believe that slightly different results might be produced, as these conditions more or less affected this process.

Therefore, notwithstanding the greatest care in its use, here again probably is a factor, that may at times tend to produce the variable results.

Another very serious objection to amalgam lies in its liability to discolor under certain conditions, and these, whatever they may be, are so frequently met with that it quite bars its use almost always in positions in the teeth where it may be conspicuous to others.

However, this discoloration does not always occur, by any means, and many are the cases in which fillings keep almost their original brightness and lustre for years, standing in that respect equally as well as gold.

Having enumerated the disadvantages of amalgam as a filling-material, let us now turn to its advantages. These may be quickly summed up in a single sentence which reads: "Amalgam will save many teeth for a longer period of usefulness than will any other material."

Only a few years of fruitful practice will be required to quite dishearten the most enthusiastic admirer of gold as a filling material, and convince him that not only in his own hands, but in those of other and eminent men whose work comes under his observation, the use of that material in certain well defined cases will certainly terminate disastrously, while a better result will be obtained with amalgam. I do not mean to say that I consider gold incompatible with tooth-structure. Not at all, but I am convinced that the method of manipulation required by gold is incompatible with a certain character of tooth substance.

However opinions may differ as to the cause, there can be but one opinion upon the results obtained, and that is, that in the class of cases here referred to, gold will not save the teeth, while amalgam will, and that is the point at issue after all. When, therefore, after due observation, it has been decided that amalgam will save a certain class of teeth better than will any other material, the questions of where to use it, and the best method for its manipulation, if there is such a thing as a "best method," become at once of paramount importance.

Where the use of amalgam, as indicated in my own practice, may be limited only by the number of teeth requiring filling, as at one time or another I have inserted it satisfactorily in each of the thirty-two teeth. In the anterior teeth, while at times it might otherwise be desirable, it should only be used when it will not be disclosed to view in conversation.

The method employed in its manipulation will be considered under the following heads :

General shape and style of instruments used.

Preparation of the cavity.

Method of preparing the amalgam.

Method of inserting the amalgam.

Of the forty-seven "amalgam pluggers" already mentioned as being found in the stock of the supply houses, I find six, and only six, not only that I could use under the greatest press of circumstances, but even conceive of being at all adapted to the proper packing of the material for which they were designed.

I cannot imagine how it could possibly happen that amalgam could be properly packed into a cavity by an instrument having a large, flat, serrated surface. To my mind, I can only conceive of such a material being forced into the position required by perfectly smooth-surfaced instruments.

Such being the opinion held, my set of instruments have been selected or devised and arranged not only with the view of being able to reach and properly pack the material into each and every cavity that may possibly present, but to fill them as expediously as possible.

It has been suggested to me that there was an unnecessarily small gradation in their sizes, and consequently a needlessly large number of them, which must result in confusion in their use. But as a matter of fact, quite the contrary obtains, as in the system used for the preparation and filling of a cavity one instrument naturally follows upon the use of another definite one, and instead of confusion, great expedition results.

In the proper preparation of the cavity frequently lies one of the most difficult steps in the use of amalgam.

Very often this presents many more difficulties than if gold were to be used, for in many cases in the use of gold no undercuts at all are necessary, and a cavity with absolutely parallel walls may be safely and satisfactorily filled (with soft foil), while at other times a slight enlargement within the cavity upon only two opposite sides is all that is requisite, and these conditions are usually readily obtained.

Not so, however with amalgam. For this material the ideal cavity is one which, by its general shape, it is a little larger inside than at its orifice, while at its very margins the walls are at right angles to the surface of the filling, under which conditions the greatest edge-strength is obtained in the filling material, and also in the enamel-margin.

This is a condition usually very easily obtained in all simple cavities, but often very difficult to create in compound cavities. Sometimes, in fact, it appears quite impossible to satisfactorily shape some of these compound cavities, when, of course, it only remains to do the best possible under the circumstances.

The preparation of the cavity requires necessarily as great care as if gold were to be used. The marginal surfaces of the tooth to be filled are first polished with disks or strips if it be an approximal surface involved, or with fine cut burs or stones if it be other, that the extent of the cavity may be at once determined.

Thereupon the shaping of the cavity is proceeded with, during which operation it is kept free from chips, care being taken that a slight (not deep) "undercut" is obtained upon all sides. The margins are then "squared" with a fine-cut bur, which leaves them highly polished. Then the bottom and sides of the cavity should be gone carefully over with an excavator, as this will sometimes reveal a soft spot that the engine-bur passed undetected by. Lastly, the cavity is wiped out with a pellet of spunk saturated with creasote (Morson's only), which will detect, by a change of color, any decay that may remain, and which is then removed. If a cavity is prepared entirely with excavators, its simple syringing will clear it of all chips. Not so, usually, with one prepared with rapidly revolving engine-bur. This removes the tooth-substance in the shape of a very fine powder, which in some places will appear to be ground into the wall or floor of the cavity, and simple syringing will not remove it. Therefore it is always necessary to forcibly (comparatively) swab out the cavity with one or more pellets of moistened spunk, which will leave the cavity perfectly clean. The cavity is once more wiped out with creasote, and when dried with hot air presents a glistening surface everywhere. This applies to cavities of a limited depth only.

I can but believe that the less metal there is inserted in a tooth the better will be the result obtained, and so it is my invariable custom to line all deep cavities with cement, upon which the gold or amalgam is placed as a veneer. Of course there frequently presents a cavity where it is not prudent to remove all of the softened dentine from its floor, and against that substance the use of a metal is out of the question. To that class I do not alone refer, but to them and all deep seated cavities this method applies. Deep-seated cavities are more liable to be sensitive also, and this cement lining being a somewhat poorer conductor of heat than amalgam, lessens the liability of the patient to inconvenience from thermal changes after the completion of the work.

Where this sensitiveness is but slight I partly fill with cement, and finish with amalgam at the time sitting; but where it is great I fill entirely with cement, and allow it to stand for three or four months, when it is partly cut out and amalgam inserted. In these cases the *floor* of the cavity is usually covered with a thin cream composed of the oxide mixed with creasote, which prevents the pain attending the touching of that part of the cavity with the oxychlorid. Perhaps it might be well to add that after this "cream" is applied as desired, it is dried carefully with spunk, care being taken that none be left upon the *walls* of the cavity. By these methods rarely does a patient complain of discomfort from the application of heat or cold; and as for loss of a healthy pulp from the irritation produced by thermal changes, the result is beyond the range of possibility.

In pulpless teeth, not only are the root-canals filled with cement, but with it is also filled the entire pulp chamber and body of the tooth, allowing an even depth all over the floor of the cavity for the amalgam veneer. In all compound cavities this system of veneering increases immensely the difficulty of filling, but, to use a common expression, I find "it pays." The rule followed is to practically replace about all the dentine with cement, following its original outlines, and to enamel it with metal.

Sometimes a rather shallow cavity presents, which is somewhat sensitive to heat and cold. When the floor is found good and hard, a very thin layer of Hill's stopping—a very fair non-conductor—is placed over it with good results.

I have laid especial stress upon not having the undercuts deep, because it seems to me that I have observed some change takes place in largely overhanging enamel walls, by which they lose their strength and integrity, and are liable to break away.

It is not possible for a busy practitioner to follow out all the lines of thought that present themselves, or to investigate all the causes that produce certain results that are to be seen from day to day. Many times, therefore, however much we might like to look deeper into a subject, we are compelled by press of other and more important matters to stop theorizing, and accept the result obtained from our own practical experience. Therefore I merely make the assertion, founded upon personal observation only, and not substantiated by chemical investigation, that I fully believe that oxychlorid of zinc produces a beneficial effect upon the tooth-structure, not to be observed as following upon the use of oxyphosphate.

This being the case, it hardly becomes necessary to state that the oxychlorid is the one material always used for this lining process.

Thus the preparation of the cavity under various conditions having been described, naturally we come to our next classification, the preparation of the amalgam.

The required quantity of the fillings is poured into the palm of the left hand, and sufficient mercury added to allow of its being rubbed with the finger into a dark pasty mass. This is at once washed with alcohol, whereupon the oxid is removed, and the amalgamation becomes more perfect. As soon as the button becomes perfectly clean, it is placed upon a clean piece of white paper and triturated with a steel blade until a fine, even grain is obtained. It is then twisted in a piece of China silk, which leaves no fibers adhering to it (which was the objection I found to chamois, and led me to seek something better), and well compressed with a pair of heavy pilers. The resultant wafer is perfectly clean and bright, and as free from all contaminating substances as is one's gold, which usually is handled with such great care. It is then broken into small pellets, suited more or less to the size of the cavity—never very large. For cavities whose shape will permit, the amalgam is squeezed out dry and hard as possible, but for contouring usually it is found necessary to divide the button and allow a small portion to remain a little more plastic for use in restoring the surface.

We now reach the method of inserting the prepared amalgam.

The cavity having been prepared as previously described, must be positively guarded against moisture by means of the dam or other agencies, and thoroughly dried with hot air. The process of filling it then becomes more or less easy according to its location. If in a lower tooth, a pellet is placed in it, and the force of gravitation comes greatly to our aid, and holds it there. If the cavity be a large one, the pellet of amalgam is flattened against the walls and floor with a flat blade, whereupon the instrument is reversed, and the burnisher of a proper size is at hand for the process of apparently rubbing it into the very substance of the tooth. When this is accomplished, another pellet is added and the process is repeated, and so on until the operation is completed. Warming the burnisher is often found advantageous in packing the surface of the filling.

Now this is all very well in the lower teeth, but when it comes to putting pellets of hard and dry amalgam into an upper one, well, that's slightly different. In such cases, I place a piece of cut spunk, say about one-half inch square, below the cavity, and hold it in place with the mirror. The pellet of amalgam is then placed upon it directly at the orifice of the cavity, from which position it is easily (that is, perhaps it is easily) forced into place with the flat blade, and the burnishing process proceeded with.

So, also, in appproximal cavities, spunk can be of the greatest assistance in getting the material into the cavity.

The preparation of the cavity, as well as its filling, should be so perfectly systematized as to become, under ordinary circumstances, mere routine work.

A given cavity is usually prepared with the same instruments, and one prepared with burs of certain gauge is filled with certain definite-sized instruments that are made to correspond. For example, a large cavity is more quickly and better prepared with the larger size of burs, which indicate that the larger packing instruments should follow, for it would not only be waste of time, but actually as good results could not be obtained by the use of the smaller sizes of burnishers. Again a little cavity prepared entirely with a No. ½ bur can be mostly expeditiously and satisfactorily filled with the little ball burnisher, made especially to follow that individual instrument. And so on through the entire line. Thus while at a first glance there may appear to be an unnecessary number in this set of instruments, when the system upon which their use is based is considered, such is found not to be the case.

When a cavity is filled as has been described, there results a fairly hard filling, the edges of which may be brought nearly flush with the cavity margins by the aid of the proper instrument, silk and dampened spunk. For this purpose the spunk is preferably cut, not torn, into little squares, and when dampened, as mentioned, forms an excellent medium for procuring a nice surface upon the filling.

Upon approximal surfaces, orange-wood, properly shaped and moistened, will be found most excellent for trimming the filling into shape, and removing any surplus from the cervical margins.

Particular care must be taken that in articulation the antagonizing tooth does not strike the filling, or the work will stand in danger of being ruined.

An amalgam filling should under no circumstances be left unpolished, but always at a sitting subsequent to its insertion it must be carefully polished and burnished, and, where necessary, ample room to work upon approximal surfaces must be procured by wedging.

In compound approximal cavities, when the dam has been applied, it is much the safer practice to first cut the ligature and draw it carefully away, keeping it at the gum line and away from the filling.

Then the septum of the dam should be cut, that it may be removed without having to be drawn between the fillings.

A little carelessness here, in pulling off the dam and ligature may result in taking away a portion of the newly made filling.

It has been stated that cavities prepared for an amalgam filling must be kept perfectly dry during its insertion. This is true only where it is possible. Very occasionally a lower molar presents, which to keep dry during the entire filling is out of the question. In such cases I work as expeditiously as possible, and get the entire cavity-walls lined with the first piece of amalgam before the "crevasse" occurs, and the remainder is packed wet. However, under these cir. cumstances a perfectly satisfactory result is not obtained.

The matrix does not enter as a factor into amalgam work with me.

Very frequently large compound approximal cavities are found in molars and bicuspids, extending above the margin of the gum. In these cases gold may not be indicated, and yet amalgam proves unsightly, as its labial portion may be visible. Here, then, is an opportunity to use a combination gold and amalgam filling, which I proceed to insert as follows: The cavity having been prepared and lined as heretofore described, Hill's stopping is inserted, and properly contoured in that portion only of the cavity where it is desired the gold will be placed. The rest of the cavity is then filled with amalgam, and very carefully finished off beneath the gum—the vital point. At another sitting the Hill's stopping is removed and replaced by gold. Where the dam may be applied these teeth may be so treated with comparative ease, but very frequently the cavity extends so far beneath the gum that the application of the dam is impracticable. Here, then, the greatest care must be taken to keep it dry. An approximal cavity whose margins extend near to or above the gum-line must always be protected at that point from moisture. However dry the surrounding parts in general may be kept, there will be slight exudation from the gum, which must be taken care of. When possible, the dam should be relied upon; at other times, an orange-wood wedge may be used. Again, the gum is touched with carbolic acid, and a piece of spunk, cut to proper size, may be packed against it and found to answer the purpose; but something must be there to protect that margin.

A very troublesome (to me) class of cavities is that found upon the labial wall of the anterior teeth, and extending beyond the gum and upon the very root of the tooth. Here at times where I cannot manage gold, I fill that portion of the cavity under the gum with amalgam, whereupon to insert gold at a future sitting in the remaining visible portion becomes clear sailing.

I have met with very frail laterals, centrals, and even cuspids in which I have found it advisable to fill the entire lingual aspect of the cavities with amalgam, while the labial portions were filled with gold, and their color and translucency perfectly preserved.

I have already made one statement in regard to oxychlorid, and I will now likewise make another, which is, that I believe that a combination of gold and amalgam, inserted separately as described, will save a certain class of teeth, for a longer period than will either gold or amalgam inserted alone. This is a point that I know has been discussed pro and con, with no definite conclusions being reached, but I am basing my assertion upon actual results that have stood the test of time. It is now my usual practice to fill such teeth always in just that manner.

Many have been the discussions over the electro chemical theory of decay, and very plausible arguments have been brought forward by the advocates of both views upon the subject.

I remember once opening a newly received journal, and reading a very interesting article, by which any one open to conviction would have surely been convinced that amalgam and gold in the same mouth meant nothing less than a "slaughter of the innocents" by the powerful electric current thereby generated. A few pages farther on, another writer advanced equally as convincing arguments, by which it was proven that practically the only way to save teeth was to fill them with various metals, whereby beneficial electric currents would be generated, and their preservation indefinitely assured.

All this is very interesting no doubt ; but where, in actual practice, we see tooth after tooth fail in the vain endeavor of a fine operator to save them with gold alone, and on the other hand very satisfactory results obtained by the judicious use of both materials in our own practice, what does it matter whether a galvanometer can be wired up to some of these fillings and a current shown or not ?

For the repair of large gold fillings which begin to show signs of failure at the cervicle margin and inaccessible places, amalgam is always used, and with the best results.

The mixture of alloy filings with cement, as advocated by some, has been tested, but not found altogether satisfactory.

The method that has also been suggested, of first partly filling a large cavity with oxyphosphate, into which, while still soft, a pellet of amalgam is forced to serve as an anchorage for the rest of the material, hardly meets with my approval, although cases might present where such a procedure would be advisable.

Methods have also been advanced, and I believe are practiced by some, by which a filling can be finished at one sitting, but to my mind the only manner in which to obtain the best results is to defer the polishing until a future sitting.

So also has it been demonstrated that a combination gold-and-amalgam filling may be inserted at one sitting. However, I fear that the advocates of such methods loose sight entirely of the object of such a combination filling, which appears to me should certainly occupy two sittings, as described.

Having observed the very beneficial results obtained from the use of nitrate of silver upon denuded cervicle surfaces, I was led to adopt it in conjunction with amalgam fillings, and I believe with good results.

When one of these desperate cases presents, in which the cavity extends upon the root of the tooth, and appears to be almost without limit, it is carefully wiped out with nitrate of silver, and then dried just previous to the insertion of the amalgam.

While it is impossible to say positively whether or not such treatment produced any beneficial results, I am very much inclined to think it did, and consequently I have comparatively recently adopted this method in ordinary cavities in which the walls were exceedingly soft. However that has not been practiced a sufficient length of time from which to form an opinion as to its value.

There are upon the market, it would be quite difficult, if not impossible, to say how many kinds of amalgam alloys, each of which must have its admirers and users. To say which of these is the best—if any one is the best—would be an impossibility, and so my advice would be that when one is found that "works" satisfactorily, and produces the best results, to settle down to its exclusive use.

So, while I am not prepared to advocate the use of any one alloy, I am ready to boldly declare against one, which, however, is not an alloy at all, for it is claimed to be pure copper. Now, whatever you may use, do not use copper amalgam, save occasionally in deciduous teeth, would be my advice. Fortunately for me, and incidentally, for my patients as well, I began the careful experimental use of this material some time before its "craze" swept over the land, and early began to see its bad results; otherwise I might have more cause to regret its advent among us.

Let me add my most earnest solicitations in regard to keeping of a full record of all operations. A stenographic record of the tooth, and what treatment was given it, including in the case of a filling, the surface involved and the material used, can be made in a few seconds of time. In the case of the use of plastics of any kind, a distinguishing mark of some kind should be added for future reference.

With a record faithfully kept not only will a practice be carried on in a business-like manner, which in itself is very desirable and commendable, but then, and then only, will it be possible to form an intelligent opinion of the various materials used.—DR. C. EDMUND KELLS, JR., New Orleans, in *Dental Cosmos.*

## BOOK NOTICES.

WORLD'S HISTORY AND REVIEW OF DENTISTRY. Edited, compiled and revised by Herman Lennmalm, D.D S., from the most reliable and authentic resources available. A compendium of facts and historical data regarding the dental profession. Chicago: W. B. Conkey Company, 341-351 Dearborn St.

There is but little of the history of dentistry in this book. A few paragraphs report the names of men who practiced the calling, giving their nationality, with so slight a notice that it would better be called a "chronological table" than a historical record. The remainder of the book gives the names of the Dental Colleges, the Dental Journals, the number of dentists, &c , &c. Nevertheless, the author must have used considerable labor and industry to obtain all the other points which he has collected, and is to be thanked and congratulated for his effort, as the book will prove a valuable reference and guide. It is published at a cost of $5 per copy, and may be obtained of the S. S. White Dental M'f'g. Co , The Wilmington Dental M'f'g. Co., H. D. Justi & Son, and of the author at Rockford, Ill.

USEFUL HINTS FOR THE BUSY DENTIST. By W. H. Steele, D.D.S. Published by the Wilmington Dental M'f'g. Co., No. 1413 Filbert Street, Philadelphia. 1895.

The 567 receipts published and collated by Dr. Steele has been succeeded by a second volume of the same nature, bearing the above title. While we pronounced the first "good," we can truly say that the second effort is "better," and we doubt not will be appreciated by the "Busy Dentist" who has not the time to read long articles.

### PAMPHLETS RECEIVED.

Quarterly Circular, published by C. Ash & Sons, London. Besides their specialties it contains some sixty pages of interesting reading matter.

## THE PRACTICAL PLACE.

### A Most Excellent Cleansing Fluid.

| | |
|---|---|
| Chloroform | 2 drachms. |
| Alcohol | ½ ounce. |
| Liquid Ammonia | 2½ ounces. |
| Sal. Soda | ½ ounce. |
| Castile Soap | 2 ounces. |

Cut the soap up fine and dissolve in one gallon of soft (or rain) water.

Dissolve the ½ ounce of sal. soda in as much soft water as is necessary to take it up, then add this in another bottle to the chloroform, alcohol and ammonia. When the castile soap is entirely dissolved add all these ingredients to it. Shake it up well and bottle it securely. It will keep for years. To remove spots from clothing or carpets use the liquid on a sponge.

### Jokes.

Dentist. "You say you have severe pains in the teeth?"
Patient. "Terrible."
Dentist. "Do these pains recur frequently?"
Patient. "Every *five minutes.*"
Dentist. "And do they last long?"
Patient. "At least *a quarter of an hour.*"

A lady came to a dentist to have a tooth extracted, which being done she tendered the operator a dollar.

The dentist, considering the fee insignificant, said to her, "This is no doubt for the bell boy who showed you in"

The lady, who read her man, replied without being moved, "No, sir; it is for both of you."

### Impressions for Full Cases.

I do not consider plaster the ideal impression material for full cases. In making this assertion, I am well aware that I differ with many of my readers. A perfect impression of the mouth can be made with plaster mixed thin. It gives a perfect impression of the mouth; but we do not want such an impression, if so, why is it we scrape the cast before making the die or vulcanizing the rubber plate? We scrape because we want good adhesion, and this cannot be had without giving the plate a heavier bearing on the softer part of the mouth, and we usually accomplish this by scraping the die on the yielding parts. This scraping is guess-work; the longer we have guessed and scraped the better will be our success. Some advocate the use of modelling compound for full cases; while this might give a good impression of the arch, I do not believe it can be depended on, as the muscles crowd the material away from the ridge in forcing the impression in place.

My method is to first take an impression of plaster; remove and dry off thoroughly; scrape sufficiently to remove the roughness; then take a sheet of modeling compound base plate; warm and shape it nicely in the warmed impression; invert the cup over a lamp till the compound is quite soft; immediately insert in the mouth and press firmly to place; with a glass of cold water and syringe cool the compound; when set, remove from the mouth and pour the cast; by this method we get a cast that is smooth, easily removed from the impression, and which gives a good fitting plate without any need of scraping.—DR. WM. H. STEELE, Forest City, Ia.

### TOOTH PASTE FOR COLLAPSIBLE TUBES.

| | |
|---|---|
| Precipitated Chalk | 8 ozs. |
| Orris Root | 8 ozs. |
| Oil of Cloves | 1 dr. |

Honey enough to form a paste.

### REMOVAL OF PULP-TISSUE IN ROOT CANALS.

When the pulp-tissue in the canals remains sensitive after devitalization with arsenic, inject a 4 per cent. solution of cocain with hypodermic syringe in each canal, and the tissue can be removed without pain. "You will be astonished at the result."—GEORGE A. MAYFIELD.

### ASEPTIC MOUTH WASH.

| | | |
|---|---|---|
| ℞. | Extr. hamamelis virg. dist. | ii. fl. oz. |
| | Acidi baracici | ss. dr. |
| | Tinct. capsici | ii. dr. |
| | Menthol | xx. grs. |
| | Literin | iii. fl. oz. |

### TN REMOVE TEETH FROM AN OLD VULCANITE PLATE.

A simple and easy method of abstracting and cleaning the teeth from vulcanite rubber is, first put the teeth in dry plaster on an iron spoon, covering the teeth with it. Place the spoon with its contents in the fire and let it remain till the plaster becomes red-hot, then withdraw the spoon from the fire, leaving it to cool, which occurs almost immediately. Then remove them from the plaster, and the teeth will be found to be perfectly clear and uninjured, as when received from the manufactory. I have also used this method with vulcanite mounted cases of two and three teeth. No trace, whatever, of any rubber adhering to the teeth. The teeth also become firmer by being annealed.—DR. BERHARD, Bath, England.

I would like to bear testimony to the value of salol as a root-filling material. Since the publication of Dr. Mascort's paper and for a month previous to that, because I had the paper in my possession fully a month before it was published, I have used nothing but salol for filling roots in my practice. I have, in some cases, used it in connection with a gutta percha point, but generally without it. It crystallizes solidly in the canal. When it is melted and introduced in the warm, dry canal, it apparently flows in the uttermost extremities of it. It has a fluid character like melted paraffin or the paraffin oils, and in a few moments it crystallizes. I have yet to have the first case of apical pericementitis follow a case so treated, though I have been almost, you might say, careless in the use of it,—that is, I have used it in immediate treatment of cases and those of recent devitalization, and it has been uniformly satisfactory to me.—DR. KIRK.

### ARSENICAL APPLICATIONS.

In lymphatic patients, the application may be made directly to the pulp, and the operation will be painless. In patients of the nervous temperament, a similar application will be exceedingly painful, and the arsenic should be placed in the dentine as far as possible from the pulp. It all depends on the temperament of the patient, which should be noted in every case.—J. FOSTER FLAGG.

### DEVITALIZATION OF CONGESTED PULPS.

To overcome the irritation from pressure of inflowing blood to the congested pulp * * "I have never found any agent equal to iodoform combined with arsenic." Four times as much iodoform as arsenic, one drop of carbolic acid, a piece of cotton the size of a pin's head; apply to the pulp, cover with a tin cap, seal with oxiphosphate.—JAMES TRUMAN.

### PROTECTION OF ARSENICAL APPLICATION.

Cover with a pellet of dry cotton, over which place cotton saturated with chloro-percha. The chloroform acts as an obtunder; the gutta percha is impervious to moisture; the application is painless.—D. D. ATKINSON.

THE

Dental Office and Laboratory.

FOURTH SERIES.

Vol. IX. PHILADELPHIA, NOVEMBER, 1895. No. 6.

# TIDINESS.

By T. F. Chupein, D.D.S., Philadelphia.

I called on a dental friend one afternoon after office hours, to make him a friendly visit, and found him, as he usually is, *cheerful*, although at the time his *chair was empty*. After conversing for a time in his den of horrors, I could not help commenting on the neatness of his surroundings and the freedom from all *litter* about his operating chair.

"Have you been working at your chair to-day?" I enquired, and he answered, "Yes, since half-past eight o'clock this morning."

"Well," said I, "your chair, your rug, your instruments all look more as if you were about to begin, not to finish work for the day. How do you do it?"

He then told me that he had *schooled* himself to work in this way.

"I have duplicate excavators and nerve instruments. As soon as I have finished working with these for one patient, my attendant removes them from the bracket table and puts them in the sterilizer.

"All pieces of cotton, bibulous paper, spunk, ends of ligature silk, and sand paper disks, instead of throwing on the floor I put into this little red glass vase which I keep on my bracket table for the purpose Mouth napkins, towels, and rubber dam I put into this basket"—indicating a basket with a lid, similar to what is used by fishermen—"which keeps them out of sight, and makes the operating chair and its surroundings as clean and tidy for the patient leaving it as for the one who is to occupy it.

"Besides this I always keep a napkin over my head rest, which I remove in presence of the new patient, and replace with a clean one, for it is not pleasant for our patients to lay their heads on a napkin which has been used by another patient; however tidy the former patient may look, there might be a *suspicion* of such contact.

"In long operation, especially on the lower jaw, when the rubber has to be kept in place by a clamp, which makes it almost impossible for the patients to retain the saliva, I have a square of rubber dam—(a yard square)—this I place in front of the patient over the dress, and over this a nice large clean towel.

"When the dam has been applied, I place a small napkin over the patient's chin beneath the dam and hold this in place with two clamps applied—(one on each side) to dam and napkin. In this way the patient is made as comfortable as possible, and the operator can work more comfortably and tidily."

In contrast to this we have seen dentists offices at the close of the day's work a mass of disorder and litter. On the rug next his chair were strewn bits of ligature silk, sand paper disks, wads of cotton, pieces of bibulous paper, bloody napkins and the like. Dirty water would be in his basin, which probably had been used a half dozen times while he waited on that number—(or maybe more) different patients. A wet towel lay on the back of a chair. Pieces of dam lay strewn over the carpet, letters and newspapers occupied desk, chairs, sofa or book case, all presenting such a disorderly and untidy appearance, that if a patient could see it who had any notion of order and tidiness, she might deliberate about employing such a dentist, however great might be his qualifications or skill.

It costs no more to be tidy than untidy, once a man gets in the way of working tidily, and it is only necessary for him to adopt a tidy habit and school himself into this way of working by thinking a little when he is in the act of working or doing some untidy trick or habit. Once the habit of working tidely becomes well instilled it becomes a second nature, and the work goes on intuitively without an effort.

[TWENTY-THIRD PAPER ]

# LEADING QUESTIONS AND ANSWERS FOR DENTAL STUDENTS.

By Theodore F. Chupein, D.D.S., Philadelphia, Pa.

Q. What are the claims of the inventors of Electric and Mechanical Mallets?

A. That the force of the blow can be controlled by the operator. That the gold can be evenly condensed throughout the entire filling. That by proper handling the gold may be packed against the thinnest wall of enamel without fracture. That it saves time and fatigue for the operator. That it is not as disagreeable to the patient as the automatic mallet, and when understood is easily worked.

Q. Does all pain cease after the tooth is filled?

A. No: frequently pain is experienced when a tooth is filled with gold, amalgam or tin, when the patient draws in a breath of air, or takes a mouthful of cold water, hot coffee, tea or soup.

Q. Why is this?

A. All metals are good conductors of caloric.

Q. What do you mean by caloric?

A. It means the principle of heat.

Q. Is this pain an unusual sequence after a tooth is filled?

A. It is not? Nearly all newly filled teeth, when filled with metals give these sensations to a greater or lesser degree.

Q. Does the pain continue?

A. No, it generally subsides after a few days or a week.

Q. Should it not subside what is to be done?

A. The filling should be removed and a non-conducting material be placed over the thin septum of dentine over the pulp.

Q. Why not have done this in the first instance?

A. This should have been done, and should always be done when the cavity is deep or large, making it presumable that only a thin layer of dentine covers the pulp.

Q. What materials are used for this purpose?

A. Asbestos, Gutta-percha in the form of a thin wafer, or in solution with chloroform, and oxy-phosphate.

Q. Which of these materials is mostly used for this purpose?

A. The Oxy-phosphate of zinc.

Q. Why would you use the Oxy-phosphate in preference to the Oxy-chloride?

A. Because the former is less irritating.

Q. What might result if this matter of pain, produced on the taking of hot or cold food in the mouth, after a metallic filling was inserted be not attended to?

A. It might lead to periostial inflammation and subsequent alveolar abscess.

Q. Why should this produce these sequences?

A. The pulp being so repeatedly shocked by the sudden and violent changes of temperature, induced by the hot and cold food would die, and the death of the pulp would result in abscess.

Q. How long does it take to fill a tooth?

A. This can only be answered by the case in hand. A cavity easy of access may be filled in twenty minutes or a half hour, whereas one that is inaccessible, difficult to prepare and otherwise hampering the operator, would take from two to three hours.

Q. What should be the aim of every operator?

A. To make every operation as thorough and successful as possible. He should not, because the operation is easy of execution, slur any point, but give as much attention to every detail whether it be simple or difficult. This is the only road to success.

Q. How should compression be made on a filling?

A. Always with a guard to prevent the instruments from slipping.

Q. How would you recommend this to be done?

A. The pressure should be made with the wrist, and at times with the forearm, but the elbow should *always* be held close to the body. In this way the instrument cannot slip. In condensing a filling in the upper jaw the operator should stand on the right and a little back of his patient, with the finger and thumb of the left hand placed on the outer and inner side of the tooth he is filling; if on the lower jaw he should stand a little in front, and in some cases on a stool, so as to bring himself higher; but in all cases of exerting pressure he should never forget to keep the elbow close to the side of his body.

Q. You have described the manipulation of filling teeth in simple localities. How would you proceed to fill a cavity in the proximate surface of any of the front teeth?

A. The first requisite in these cases is the obtaining of space. This may be accomplished by the insertion of wedges of soft wood between the teeth, tape, cotton floss, or rubber. Rubber is too active, besides it is more liable, from its elasticity, to make its way up to the necks of the teeth, where, pressing against the gum, it causes great pain. Tape may be used as well as cotton floss with no fear of pain, and considerable space may be gained with either. Where the teeth are wedged very close to each other it may sometimes be necessary to start them with one thickness of a piece of rubber dam, after which cotton floss may be successfully used. These agents are useful where time is no object, but where space is to be obtained, and the filling inserted *at once* it is to be gained by the use of the *separator*. The separator is an instrument used to force teeth apart. It acts on the principle of the wedge. The space gained, the cavity in the proximate surface of any of the upper front teeth is worked from the palatal aspects. This is done to avoid mutilating the shape of these teeth on their front or labial surfaces. The cutting should be done entirely from this surface. By having a space, it is possible to file or cut these teeth on these surfaces without touching their labial surfaces, and a permanent self-cleansing space made, which will add to the integrity of the filling inserted on this surface. The cavity, in these surfaces, is formed as in other localities. A distinct groove or undercut is made at the cervical border if non-cohesive gold is to be used, or a retaining pit if cohesive gold is employed, while the wall towards the cutting edge is shaped with a hook excavator so as to produce an undercut at this point. The gold in rope, ribbon or pellet form is introduced from the palatine aspect, and the same directions given for condensing it or packing it into the cavity are observed in these cases as in others. It is well, in filling these cavities, especially with non cohesive gold, for the operator to support the tooth being filled with the thumb and finger of the left hand, to relieve, as much as possible, the pressure used to consolidate the gold. The gold protruding from the margins of the cavity is gathered up and condensed. The whole surface of the filling is gone over, successively with larger and then smaller points, until it is found to be uniformly solid. All protruding parts are then made smooth, even and flush with the surface of the tooth when it may be highly polished with polishing strips, sand-paper disks, and such means as are used for this part of the operation.

Q. How would you proceed to fill a proximal cavity in the bicuspids or molars?

A. When such decay occurs on the mesio-proximal aspect, the cavity may often be prepared and filled by obtaining space and by making only a slight encroachment on the masticating aspect. Or should there be a decay on the distao-masticating surface of the forward teeth, the decayed place on the mesial aspect of the posterior tooth may be prepared and filled *through* this space, without encroaching on the masticating surface of the farther back tooth; but when the decay occurs on the distal aspect of a first or second bicuspid, or molar, it is necessary to cut through the masticating surface, making a compound cavity, as it is next to impossible to see and manipulate the gold, unless this form is given to the cavity.

Q. If this form is given to the cavity what is to prevent the gold from being pushed out instead of being packed in?

A. The cavity is shaped to prevent this. A groove is formed at the cervical margin and a dove tail shape given on the masticating surface. Besides this the instruments used are so bent as to exert a downward pressure and thus the gold is forced in and not out of the cavity. Some operators, besides filling the cavity, permit enough of the gold used to protrude out of the cavity until it touches the adjoining tooth, and continue the filling until it is quite full, when the protruding part is cut down flush and even. Others use a matrix in such cases and remove the matrix when the filling is inserted. This requires less gold and less labor in the subsequent finishing, but the matrix, although a great aid, is not regarded by many operators as a reliable adjunct.

Q. What is the matrix?

A. It is a band of thin metal that encircles the tooth, and is held securely by screws against it, so as to form a wall against which the filling is packed, and to reduce, in a great measure, the difficulty of the operation.

Q. Why is it not regarded reliable?

A. Unless the cavity is shaped with *very great care*, so as to ensure the filling of all parts with equal density, there is a liability of the walls of the cavity which lie in contact with the matrix,—especially the lateral walls,—being porous and not densely filled. For this reason the matrix is condemned by some operators.

[TO BE CONTINUED.]

## STOP AND THINK.

### BY T. F. CHUPEIN, D.D.S.

I had recently to extract a lower wisdom tooth, but after the tooth had partly left its socket and was about one eighth of an inch above the grinding surface of the second molar, there it remained entirely loosened, moving from side to side, yet still refusing to come out. Fearing to use more force to dislodge it than I *had* done, I *stopped to think* what was the trouble, and concluded that the roots of the tooth must have the *backward curve* which the roots of these teeth frequently assume. By placing an elevator like Fig. 1 between the teeth and using the second molar as a fulcrum, the partly extracted third molar was made to describe the segment of a circle backward towards the throat, and the tooth left its socket with scarcely an effort; while before, it resisted considerable force, which, if continued, would have resulted in breaking off the root.

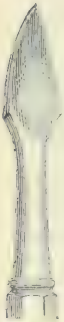

FIG. 1.

## PAMPHLETS RECEIVED.

Year Book—Connecticut State Dental Association for 1895.

The Dental Limbo—A dream. By L. C. F. Hugo, D. D. S., Washington, D. C.

> "'Mong hazy scenes of changeful wonders we'rd,
> Entranced I moved about, when, Shades appeared."

## CORRESPONDENCE IN REFERENCE TO THE OPENING OF 25 PER CENT. PYROZONE TUBES.

New York, Sept. 30, 1895.

MR. THEODORE F. CHUPEIN, 1408 Pine St., Philadelphia, Pa.—Dear Sir:—Your favor of the 28th came to hand to day, and we sincerely regret that you have had so much trouble in opening the tubes of our Pyrozone 25 per cent. solution. Each tube now bears a label, recommending that it be opened within 30 days after receipt. It is preferable to open the tubes as soon as received, transferring the contents to some scrupulously clean glass-stoppered bottle, the so called ether-capped bottle being preferred. If the directions given on the label are followed, we do not think you will have any trouble in future. *Should the tubes not be opened before the expiration of the time limit given on the label, we advise that they be returned for others.* Yours very truly,

McKESSON & ROBBINS, 91 Fulton St.

P. S.—The best way to open the tubes, after immersing them in cold water, is to take a three-cornered file, wrap a towel around the tube, and just file about half way through at the point just below the bulb where the tube is sealed. Do not file clean across it, but only half way, and then, with a sharp tap with the file, knock the end off.

## MEETINGS.

### SOUTHERN DENTAL ASSOCIATION.

The next annual meeting of the Southern Dental Association will be held in Atlanta, Georgia, commencing the first Tuesday in November. Arrangements are being made for the greatest meeting in the history of the "Southern." The cotton States and International Exposition will be in progress, and railroad rates will be very low. All friends will be given a hearty welcome.

Respectfully,

E. P. BEADLES, Cor. Sec'y. S. D. Asso.

### DENTAL ASSOCIATION OF NEW SOUTH WALES.

The third annual meeting was held at the Australia Hotel on Friday, and was well attended. The president (Dr. Burne) occupied the chair, and stated, on behalf of the council, that great hopes were entertained of the Dental Bill being brought before Parliament and becoming law during the ensuing year. The balance sheet showed a credit balance of £73 in hand. It met with general approval. The following officers were elected for the year 1895-6: President, Dr.

Burne; vice-presidents, Messrs. H. Paterson and S. Chaim; hon. treasurer, Dr. W. T. Halstead; hon. secretary, Mr. H. Taylor; committee, Dr. Arthur Hinder, Messrs. C. C. Marshall, F. G. Hollway, J. Darton, H. S. Newton, E. A. Gabriel and Byron Ruse; auditors Messrs. Corbett and Hebblewhite. A vote of thanks was unanimously accorded to the president, who, in thanking the members for their support, referred to the necessity of the profession drawing closer together, and thus securing a higher status. A vote of thanks to the hon. secretary for past services and also to the chairman closed the meeting.

## National Association of Dental Examiners.

The thirteenth annual session of the National Association of Dental Examiners was held at Asbury Park, N. J., commencing Monday, August 5, 1895; the president, Dr. L. Ashley Faught, of Philadelphia, in the chair.

The following state boards were represented at the sessions.

Alabama—T. P. Whitby.
Delaware—C. R. Jefferies, D. M. Hitch.
Georgia—J. H Coyle.
Iowa—J. T. Abbott.
Kentucky—H. B. Tileston.
Kansas—J O Houx.
Colorado—R. B. Weiser.
New Jersey—F. C. Barlow, Chas. A. Meeker, Geo. E. Adams, E. M. Beesley.
Pennsylvania - Louis Jack, W. E. Magill, L. Ashley Faught, Jesse C. Green.
Tennessee—F. A. Shotwell.
Virginia—J. Hall Moore.
District of Columbia—H. B. Noble, Williams Donnally.

The following boards were elected to membership:

Connecticut—George L. Parmele.
New York—Wm. Carr.
New Hampshire—Edward B. Davis.

A resolution, offered by Dr. Barlow, requiring credentials to the association to bear the official seal of the state board making the application, was adopted.

A resolution offered by Dr. Donnally last year, and laid over, permitting persons who have been delegates to the association to be associate members without the right to vote or hold office, was taken up and adopted.

Dr. Jack offered the following, which was adopted:

*Resolved*, That this body would express to the Association of Faculties the importance of an examination of the equipment, methods, and facilities of instruction of all the dental colleges of the country; it being understood that such examination is to be purely in the interest of higher educational standards and toward an approach of ultimate uniformity in the curriculum and methods of the schools, and more particularly to enable safe action to be made with respect to new schools.

Later a communication was received from the secretary of the National Association of Dental Faculties to the effect that the association had ordered the secretary to secure information from the various colleges regarding their equipment and general facilities for teaching: that this information would be systematized so as to be available at the next annual meeting of this body.

The following " plan of requirements for the recognition of dental schools," offered by Dr. Jack, was adopted, with a proviso that it shall apply only to colleges making application after the close of this session:

That each dental school which may in future come before this board for recognition, must have a teaching faculty composed as follows, to wit: at least three professors of dental subjects, namely, for operative dentistry, for dental prosthetics, for dental pathology and therapeutics. For the medical subjects there must be at least five professors, namely, for anatomy, for physiology, for chemistry, for pathology, and for materia medica.

Its students must also be taught the subjects of chemistry and bacteriology in laboratories adapted to the purpose and under suitable instructors.

That such special school must possess, in addition to suitable lecture-rooms, a well-appointed dental infirmary and a general prosthetic laboratory; also each school must be provided with a room or rooms suitable for manual training in operative dentistry, and must furnish in this way systematic instruction to its students.

All of these provisions are to be determined by careful inspection on the part of the Board of Examiners of the state within which is located the school, or other authorized body duly indorsed by this association. And upon the result of this examination may depend the question of reputability.

The following colleges were added to the list as recognized schools:

Dental Department of the University of Denver, Denver, Col.; Department of Dentistry of Detroit College of Medicine, Detroit, Mich.; Dental Department of Western Reserve University, Cleveland, O.

Applications from the following were laid over one year: University of Buffalo, Dental Department; Atlanta Dental College; University College of Medicine, Dental Department, Richmond, Va.; Birmingham Dental College; Cincinnati College of Dental Surgery.

The committee on Colleges in its report, which was presented by its chairman, Dr. Jack, expressed the view that more should be required to establish the right of dental schools to recognition by this body than good organization and the fulfillment of the rules of the

Association of Faculties. Evidence should be furnished that the teachers are of high standing; that they require of their matriculates the stipulated preliminary training, and that they are carefully qualifying their students in every necessary direction. To ascertain these facts is a matter of difficulty. It is necessary, too, in addition to an ascertainment of the character of the faculties of any school, to discover the degree of confidence which has been developed in the minds of the local members of the profession.

The number of students in actual attendance in all the schools of the country for the session 1894–95, excluding those attending special courses, was 4979, as against 3997 at the previous session; graduates 1208, as against 911.

The committee also expressed the conviction that it is becoming evident that the dental schools are increasing in number beyond the needs of the public, owing to the tendency of medical schools to inaugurate dental departments. The installation of dental departments in connection with medical schools is necessarily often incomplete, and therefore the committee believes that restrictions should be placed upon the rapid increase of insufficient dental colleges. As the practice of dentistry is largely based upon knowledge of chemistry and bacteriology, and as manual training has become an integral part of the curriculum of some of the better schools, we recommend that the association do not in future recognize any schools unless satisfactory evidence is furnished that the students of such schools applying for recognition are being taught in modern chemical and bacteriological laboratories, and are also furnished with every convenience for manual training in prosthetic and operative dentistry, and that this latter mode of practical instruction is systematically carried on in at least the first year's course.

The committee also called attention to the importance of a higher standard of preliminary education, and to the impropriety of schools advertising as instructors practitioners who occasionally clinic before the students, but are not a part of the staff of the institution.

The report was adopted.

The following resolution, offered by Dr. Magill, was unanimously adopted:

*Resolved*, That we will not in future consider favorably an application for recognition from any college which has a member of its faculty one who also holds membership in the State Examining Board.

Dr. Donnally moved that final action shall not be taken on the application of any college until such application has been in the hands of the chairman of the Committee on Colleges for at least ten months. So ordered.

The following were elected officers for the ensuing year: J. T. Abbott, Manchester, Iowa, president; H. B. Nole, Washington, D. C., vice president; Charles A. Meeker, Newark, N. J., secretary and treasurer.

Adjourned.

## NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The twelfth annual meeting of the National Association of Dental Faculties was held at the Ocean Hotel, Asbury Park, N. J., commencing Saturday, August 2, 1895; the president, Dr. Frank Abbott, in the chair. The entire membership of the association was represented at this meeting as follows:

University of California, Dental Department—L. L. Dunbar.
University of Denver, Dental Department—R. B Weiser.
Columbian University, Dental Department—J. Hall Lewis.
National University, Dental Department—J. Roland Walton.
Southern Medical College, Dental Department—Frank Holland.
American College of Dental Surgery—Louis Ottofy.
Chicago College of Dental Surgery—Truman W. Brophy.
Northwestern College of Dental Surgery—J. A. Whipple.
Northwestern University Dental School—George H. Cushing.
Indiana Dental College—George Edwin Hunt.
University of Iowa, Dental Department—A. O. Hunt.
Louisville College of Dentistry—Francis Peabody.
Baltimore College of Dental Surgery—M. W. Foster.
University of Maryland, Dental Department—F. J. S. Gorgas.
Boston Dental College—J. A. Follett.
Harvard University, Dental Department—Thomas Fillebrown.
Dental College of the University of Michigan—J. Taft.
Detroit College of Medicine, Dental Department—G. S. Shattuck.
University of Minnesota, College of Dentistry—Thos. E. Weeks.
Kansas City Dental College—J. D. Patterson.
Western Dental College—D. J. McMillen.
Missouri Dental College—A. H. Fuller.
University of Buffalo, Dental Department—W. C. Barrett.
New York College of Dentistry—Frank Abbott.
Ohio College of Dental Surgery—H. A. Smith.
Western Reserve University, Dental Department—H. L. Ambler.
Pennsylvania College of Dental Surgery—C. N. Peirce.
Philadelphia Dental College—S. H. Guilford.
University of Pennsylvania, Dental Department—James Truman.
Meharry Medical School of Central Tennessee College, Dental Department—G. W. Hubbard.
University of Tennessee, Dental Department—J. P. Gray.
Vanderbilt University, Dental Department—Henry W. Morgan.

Royal College of Dental Surgeons of Ontario—J. B. Willmott.

The following colleges were admitted to membership:

University College of Medicine, Dental Department, Richmond, Va.—L. M. Cowardin.

Atlanta Dental College—Wm. Crenshaw.

Birmingham Dental College—T. M. Allen.

Cincinnati College of Dental Surgery—G. S. Junkerman.

Cleveland University of Medicine and Surgery, Dental Department—S. B. Dewey.

The following, laid over under the rules from last year, were adopted as here given:

*Resolved*, That in view of the recommendation of the Executive Committee that this association now in session shall require that all colleges, members of this association, shall extend the term of the session of 1896-7, and of succeeding sessions, to not less than six months each.

Beginning with the session of 1895-6, no college shall be permitted to retain membership in this association if it is conducted or managed, in whole or in part, by any person or persons who do not practice dentistry in accordance with well recognized and generally accepted forms, generally known as dental ethics, or if they are owned in whole or in part by men or women who are engaged in disreputable dental practice, or if any college have upon its list of trustees, the faculty, demonstrators, or in any other capacity, any one who does not practice dentistry in accordance with the principles above mentioned. This shall refer to dentists only.

Beginning with the session of 1896-7 the examinations conducted by the colleges of this association shall be in the English language only.

The other resolutions which came over from last year for action were laid on the table.

A resolution was adopted requiring each college holding membership in the association to file with the secretary sixty days before the next meeting a detailed statement of its equipment and facilities for teaching; all new applicants to file a similar statement with their applications. The secretary was instructed to have blank forms printed for the purpose and forwarded to the various schools.

The report of the special committee on preliminary examinations was received and the committee discharged.

The following resolutions offered by Dr. Patterson were adopted:

*Resolved*, That students in attendance at colleges of this association are required to obey the laws regulating the practice of dentisty in the various states, and failing to do this, shall not again be received into any of the colleges of this association.

*Resolved*, That when a college of this association has increased the cost of tuition fees, no student shall be received at the former fee except those who have matriculated at such college prior to such action.

The Committee on Text-Books reported in favor of the adoption as text-books by the colleges of the association of two works, namely, "Dental Anatomy," by G. V. Black, M. D., D. D. S., and "Methods of Filling Teeth," by Rodrigues Ottolengui, M. D. S. The report was adopted.

The following lie over until next year:

Amendment to the rules offered by the Executive Committee:

That each college be allowed two delegates, and be limited to one vote for each school.

By Dr. Peabody:

That when a student who has matriculated within the time limit in any recognized college shall, from sickness, death or sickness in family, lack of funds, or other reasonable cause be compelled to retire from that college before the expiration of the term, he may be allowed to make up the deficit of time in the same or any other college (provided he enter at a date not later than that on which he retired), be examined by the last college entered, and if the examination be up to the requirements of that college, and otherwise satisfactory, may be given tickets for advanced standing or graduated, as the case may be.

By Dr. George Edwin Hunt:

Amend the last portion of Rule 3 to read as follows:

"Except on such conditions as would have been imposed in the original school, and these to be ascertained by conference with the school from whence he came."

By Dr. Gray:

Moved that when students from one college apply for advanced standing to any other college of this association it shall be the duty of the Dean or Secretary of the latter college to ascertain by correspondence with the college from which the student comes if there be any objection to his acception.

By Dr. Gray:

*Resolved*, That all colleges of this association shall charge not less than one hundred dollars tuition each session.

By Dr. A. O. Hunt:

*Resolved*, That a student who is supended or expelled for cause from any college of this association shall not be received by any other college during that current session.

In case the action of the first college is expulsion the student shall not be given credit at any time for the course from which he was expelled.

Any college suspending any student shall at once notify all other members of this association of its action.

The following resolution offered by Dr. Ottofy was adopted:

*Resolved*, That the endorsement of applications for membership, made during the coming year, shall be based upon definite knowledge obtained by a careful examination of the methods of teaching, the equipment, and the efficiency of the Faculty.

The report of the committee on revision of the constitution, laws, and codified rules was considered section by section, and laid over for final action next year; and the committee, consisting of Drs. Louis Ottofy, A. O. Hunt, and J. D. Patterson, was continued.

The following were elected officers for the ensuing year: S. H. Guilford, president; Geo. H. Cushing, vice president; Louis Ottofy, secretary; Henry W. Morgrn, treasurer; J. Taft, Thomas Fillebrown, B. Holly Smith, executive committee; H. A. Smith, A. O. Hunt, and T. W. Brophy, ad interim committee.

The newly elected officers were installed and the president announced the standing committees as follows: J. A. Follett, L. L. Dunbar, Geo. Edwin Hunt, C. N. Peirce, and T. W. Brophy, committee on schools; J. D. Patterson, A. O. Hunt, J. B. Willmott, T. E. Weeks, and J. P. Gray, committee on text-books.

Adjourned to meet at the call of the executive committee.

## SELECTED ARTICLES.

### VULCANITE AND ITS TREATMENT*.

The physical changes which vulcanite undergoes during the process of its becoming a solid body, I think are little understood. At any rate, the remedy for many of the evils of unscientific treatment are too rarely employed.

To begin with, let us briefly consider the elementary character of this body. The gum, as it comes to the manufacturer, is a purely vegetable compound—a hydro-carbon, made up of $H_{16}$, $C_7$. Upon these proportions authorities differ, but not to the injury of our argument.

Sulphide of mercury, which renders the body of use in our art, is now added in the proportions of 1 to 2 of rubber. We now have a compound, which when properly, treated, produces a uniformly dense and sufficiently strong base for our purposes.

Some of our high attenuationist friends boldly declare red vulcanite plates to be the origin of all obscure physiological derangements, charging as they do that the coloring pigment is red oxide of mercury, which is highly irritating to mucous tissue. The absurdity of this charge is clearly manifest when it is stated as a matter of fact, that our coloring pigment is simply sulphide of mercury, This preparation possesses no toxic, or even disturbing physiological effects whatever, and may be brought into mucous contact with impunity.

Experimentation by thorough processes aided by the most delicate instruments, has demonstrated that the quantity of mercury which it is possible to evaporate from a vulcanite plate before actually destroying the body itself, is only infintesimally small. It should be rememberered that in order to have even this slight manifestation of its presence, a high degree of heat must be attained, a condition which could not be sanely looked for in the human mouth, not even in some of the red-flag temperaments of Western New York.

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*Read at a regular meeting of the Second District Dental Society, March 10 1895.

In the process of vulcanization it is rapidly conceded that we first have fusion of the component parts of the body under treatment, which occurs at certain definite temperatures. What are these points of fusion?

Any work on chemistry will place you right on the melting point of the sulphur in the mercury compound—and that will be 237° F. As to the melting point of the hydro-carbon compound (rubber), elaborate experiments by Dr. A. P. Southwick prove beyond the possibility of controversy that this will be at 248° F.

Now, with the compotent parts of our body all fused, we may naturally expect the commencement of that remarkable and little understood physical change in the compound which we term vulcanization. That this change does begin at once upon the fusion of the compound ingredients, and that vulcanization as we understand it may be fully completed without the addition of a single increment of heat, is easily demonstrated. All that could possibly be required in addition to the present conditions would be a continuation of the 248° to 250° F. over a longer period of time. If doubt as to the truth of this statement exists in the mind of any one present, let me suggest to him that he can easily obtain a "lazy man's proof" of it, by asking any manufacturer of rubber garments how he treats the articles as to temperaature, time, etc.

If he regards you by the honesty manifest in your face, as one who is only seeking scientific knowledge, he probably will tell you the truth. If he regards you by the honesty *absent* from your face, you will probably loom up as a possible competitor or spy on his business, and the case being different, you will be compelled to seek information elsewhere.

Continuing in my quotations of the authority mentioned, I confidently make the statement that the actual destruction of vulcanite begins at 300° F., and continues in proportion as the temperature is raised up to 600° F., where rubber will be entirely dissipated, the sulphur being affected in the same manner at 824° F.

Now, a word in regard to vulcanizers and their use. It should always be borne in mind that the degree of heat indicated by the mercury bath thermometer never registers a degree of heat corresponding to that of the inside of the vulcanizing pot where the *case is* being treated. The figures for this statement are as follows: If the stratum of atmosphere enclosed in the pot above the water line (when the cap is adjusted) is not expelled, upon a degree of heat sufficient to generate steam being reached, we can always confidently rely upon our thermometer registering from 15° to 18° F., according to the amount of water, below that actually existing within the chamber. Not only this, but we must always be prepared to take into account a considerable loss of registering power of the thermometer, through the influence of radiation of heat, the convextion of air currents, temperature of room, etc., etc. To these influences you can always safely charge a loss of registering power of the thermometer of at least 15° F., and usually more, it often being 20° F.

If these figures can stand verification, and I declare that they will, what will be the result? Simply this: the man who does not expel the atmosphere from the pot really subjects his case to a temperature of at least 30° F. more than that indicated by the thermometer. If he does expel the atmosphere he still has 15° F. more than that registered. From this point our deductions are easy. We have declared that the destruction of vulcanite begins at 300° F. As an illustration of this point let us imagine a case being treated at the old-fashioned 320° F. without regarding these two influences. The result is easy. Instead of 320° F., we have at least 350° F. If the stratum of atmosphere is expelled, we still have 335° F., to which our poor case is being subjected. If these figures and those preceding them are correct, we find ourselves treating vulcanite anywhere from 50° F., down to 35° F. above where the destruction of the compound actually begins. We are now asked what will be the manifestations of this unscientific treatment of the most abused and least understood body in the dental world. Every child in the land associates with rubber the property of elasticity, and that to the degree of exceeding in this respect any other body known to him. Do the high temperature plates retain this characteristic? By no means; on the contrary, they have entirely lost it. Why? Because the extreme temperature to which they have been subjected has destroyed this natural inherent characteristic.

The early workers of vulcanite will tell you that to-day we cannot produce a plate which can be constricted at the heels as they "used to do," and thereupon see it return to its former relations. The reason for this is obvious. The pioneers in vulcanite were instructed to vulcanize at a low temperature—say 280° F. Besides this the machines placed upon the market at that date were so constructed that the heat was carried up and re-directed upon the pot, thereby losing but little by the convection of air currents and radiation. If this be true, we now have to account only for the loss of the registering power of the thermometer by virtue of the stratum of air left in the pot. We have stated this to be equal to 15 or 20° F. This reasoning will easily solve the true degree of heat to which the case was subjected, and at the same time demonstrate why that property of elasticity was not lost in the work of the vulcanite pioneers.

The next manifest injury to the base for our purposes will be in its extreme contraction. It should be borne in mind that vulcanite is affected by thermal changes more than any other solid body. Its rate of expansion in ordinary temperatures is somewhat over six times that of iron, about five times that of brass, and nearly four times that of zinc. This extraordinary expansion upon the application of heat will conversely manifest itself by contraction when the opposite thermal condition is applied. How and where will this extreme contraction be manifest in dental plates? If your case be of the stupidly contrived "gum sections," it can express itself only at one point, at the "heels" with a constant raising of the body from contact with the model at the posterior part most manifest, but really extending itself well anteriorily. How can this be demonstrated? There is but one way. Preserve your model after vulcanization and restore the plate to it, when the extreme degree of contraction will be only too manifest. The base will have no manner of contact at its posterior part with the model upon which it was vulcanized. This contraction in case of the use of gum sections with properly ground joints, must necessarily be at the rear, as the arch cannot be crushed. In the use of plain teeth, the contraction is diffused throughout the entire plate, and consequently does not appear so prominently at the point mentioned.

The question may be asked, "How can the model be preserved? This is perfectly easy. As soon as the temperature is reduced to the proper point, open the flask, remove the denture from the model, and at once place the latter over a gentle heat for a time sufficient to expel all moisture.

Another result of excessive temperature in vulcanization, and the inevitable contraction in the molecular re-arrangement which will follow may manifest itself in cracked sections or chipped joints.

Still another condition may present the case with one or more "spongy" points, usually to be expected at the thickest part of the body. The writer's deductions from the foregoing are, that all bodies of vulcanite treated at a temperature above 300° F. (actual) will show: First. Destruction, increasing proportionately with temperature elevation, and loss of elasticity.

Second. Extreme contraction, resulting in the plate having no membranous contact across the posterior part.

Third. Broken or cracked sections, or slivered at joints.

Fourth. Sponginess of vulcanite at the thickest portions, which may be manifest over a considerable surface, or may appear only at certain points, in size and shape like a split pea.

Remedy: Any or all of the foregoing results may be obviated by *maintaining a temperature within the vulcanizing pot throughout the entire period which shall not exceed 309° F.*—CYRUS A. ALLEN, D. D. S., Buffalo, N. Y.

## ELECTROZONE.

Since all purulent inflammatory processes depend upon an infection of the inflamed tissue with staphylococci and streptococci, it is evident that, by the early application of a proper antiseptic agent, we may prevent the formation of an abscess. Most of the antiseptics, however, which will destroy micro-organisms, are powerful irritants, and will, therefore, disintegrate the tissues to which they are applied, in consequence of which their employment is not always advisable. In dental practice, our principal aim should be to prevent infection with microo-rganisms, although in the mouth this is possible only by exercising great care. The oral cavity always contains innumerable bacteria, although the majority of them are inert so long as they remain on the surface of a tissue covered by healthy epithileum. If a single one of these micro-organisms obtains entrance into the depth of the tissue, which, at the time, is in the stage of non-purulent inflammation, an abscess is the result. Such infections easily occur after wounding the mucous membrane of the mouth, as well as in consequence of gangrene of the pulp. In both instances, however, by the timely employment of proper antiseptics, we may be able to prevent a purulent inflammation, although it is a fact that most of the antiseptics in common use are ineffective in accomplishing this result. The writer has, however, lately made use of a new preparation called "Electrozone," which, so far as his experience reaches, has given uniformly satisfactory results. This fluid, which is nothing but sea or salt water that has been subjected to an electrolytic current, is an admirable antiseptic. It is a clear liquid, neutral in reaction, smelling somewhat of free chlorine, and has a rather disagreeable, salty taste. It is the discovery of A. E. Woolf, who has been successful in sterilizing polluted water with it on a large scale.

It is well known that one of the most difficult problems submitted to the sanitarian has been the disinfection of the sewage of large cities, when this has been found necessary for the prevention of zymotic diseases. Through the action of the New York municipal authorities lately, such a case, of much more than usual proportions, was presented. They had purchased for the city, about two years ago, Ricker's Island, in the East River, and it was determined to extend it and to fill in certain low portions of it; so a crib-work of piles and broken stone was built. projecting toward the channel frequented by craft proceeding to or coming from Long Island Sound, and thus a vast inner space was gained from the water, which was to be filled in.

The garbage of New York was at this time disposed of by loading it into scows and then towing them far enough out to sea to prevent too great pollution and filling up of the harbor, and there it was dumped. The commissioners thought to exercise a little prudent economy, and so ordered the garbage dumped into the Ricker's Island extension, and rejoiced at the thought that thus they might kill two, perhaps three, birds with one stone. They would fill up the yawning gulf, would save the towing of the scows out into the cold, uncomfortable sea, and possibly save some money.

New York furnished over 8,000 cubic yards of choice garbage every day, consisting of ashes, about 30 per cent.; paper, 20 per cent.; street sweepings, 20 per cent.; kitchen refuse, 20 per cent.; and wood refuse, 10 per cent. By midsummer, over 1,000,000 cubic yards of this stuff had accumulated within the crib-work. During the succeeding cold weather this did not give much annoyance, but by the succeeding June, the whole mass was in a condition that can be better imagined than described. Fermentation had gone so far that at many points smoke arose continually, and an egg could be cooked anywhere a few inches beneath the surface. The stench was simply infernal. It was nauseating three miles away on the open Sound, while residents at College Point, nearly two miles away, became fairly mutinous. The dumping of the garbage was stopped, but there was a nice kettle of fish already cooked, and the problem was, what to do with the thirty acres of seething refuse, ten or twelve feet high and of varying depth. Pools of black sludge, the odor of which combined all the bad smells of Tartarus itself, were visible all over the addition. It was simply impossible to keep the brass and other metal work of the steamers plying in the vicinity from turning black, and every nhabited place near by was threatened with pestilence.*

At this juncture, Mr. Woolf undertook the Herculean task of cleansing this Augean stable. He prepared and placed in position apparatus for making electrozone in large quantities from the sea-water.

The barges, fitted up with the necessary machinery for converting the chlorides and bromides of the sea-water into hypochlorites and hyprobromides through the action of electricity, were towed to the spot, and the electrozone was, by means of hose, sprinkled upon the seething mass. *The Electrical Engineer* says, concerning the result:

"The task of reducing Ricker's Island to a sanitary condition began on June 29th last, when, urged forward by the anxious authorities, a barge was run alongside the crib, on which was installed a modest electrozone plant capable of delivering about 4,000 gallons per hour of that liquid. All around, the river waters were black and noxious, the tides doing little to improve things. But Mr. Woolf, imitating the Bismarckian policy of frying Paris in its own fat, took that water into his tanks to be purified and showered back on the stinking, smoking, fermenting mass from which it slowly oozed.* * * There is no question of the fact that over the surface of the whole thirty acres, in a brief three weeks' time, Mr. Woolf has brought death to every foul germ, gas and odor, and that the work of purifying infiltration is steadily and successfully going on. One feature of the task was the extraordinarily quick action of the liquid on the stagnant, stygian pools that had formed inside the crib, beyond the lines of dumping. One such pocket of recent formation lay effervescing under the fierce sun. A line of hose was run out to the place, and in a few seconds the evil looking scum was gone forever. In ten or fifteen minutes the vile odor was sensibly diminished, and that pool in the very heart of the green island, was soon infinitely sweeter that the ordinary city sewers."

The results were quite as satisfactory as they had been in the use of electrozone at Brewster's, N. Y., whose sewage drained into a marsh, from which a part of the New York City water supply was derived. In this instance, electrozone was sprayed into the brook at the rate of 1 part of the contained hypochlorite to 100,000 parts of water. Dr. E. A. Martin, Chemist of the Health Department, reported that analysis showed that the relative number of bacteria per cubic centimeter in different samples taken before and after treatment was as follows:

| Before Treatment. | After Treatment. |
|---|---|
| 32,600 | 8 |
| 22,000 | 42 |
| 2,353 | 12 |
| 4,134 | 0 |
| 7,000 | 0 |

From the above statements, which my limited experience corroborates, we have to admit that electrozone is the most powerful antiseptic known without being poisonous. The writer has used it in his daily practice since last March, with surprisingly good results. As a mouth wash, and wherever a strong antiseptic action is required, it has no equal. Of greater importance, however, is the prompt sterilization of septic matter in gangrenous and purulent pulpitis. In most instances, pericementitis follows the removal of remnants of the pulp when in a gangrenous or purulent inflammatory condition, or the removal of septic material from the pulp canal.

The cause for such an infection of the pericementum is evident. If a nerve broach be introduced into a pulp canal, the entrance to which is filled with micro-organisms, the broach will carry some of them along to or through the apical foramen of the root, even though portions of the pulp be alive at the time of extirpation. Bacteria are organisms so minute that they can only be detected by the aid of the microscope, with a magnifying power of at least 600 diameters. Every human mouth is crowded with them, and during operations, our fingers, instruments, and everything with which they come in contact, are infected with micro-organisms. In this manner, nerve instruments, although they may have been previously sterilized, if they are afterward permitted to come in contact with our fingers, the handles of instruments, napkins, towels, etc , which have been touched by our fingers during an operation, may infect the pericementum. Thus it becomes explicable how micro-organisms may obtain entrance to the pericementum, even though ordinary care may have been used. The question then arises, Can we obviate an infection of the pericementum? This certainly is possible, if great care and judgment are exercised.

The writer's method is as follows: In a case of purulent pulpitis, partial or total gangrene of the pulp, the diagnosis of which should be fully clear, the pulp chamber should be opened freely, which usually will instantly relieve the pain. The pulp chamber of the tooth should then be syringed out with tepid water, to which has been added some electrozone. A small piece of cotton, saturated with pure electrozone, is then introduced into the pulp chamber, followed by one or two larger pledgets, also moistened with electrozone. The patient is then directed to renew only the last piece of cotton, from three to five times daily, or at least after every meal, using the precaution to rinse the mouth with a weak solution of electrozone (about a teaspoonful to a tumbler of water) previous to the removal of the cotton. Every pledget of cotton, previous to its introduction, should be moistened with pure electrozone, and packed as tight in the cavity of the tooth as possible. When the tooth has been treated in this manner for two or three days, the pulp canal may be cleaned out and filled at once, without any fear of future pericementitis, provided that an infection of the pericementum has not already occurred.

To clean out and fill a pulp canal successfully, the rubber dam should be applied, and when in position be moistened with pure electrozone. The hands should then be thoroughly washed again, and also disinfected with the same agent. All the instruments to be used should be immersed in pure electrozone. The tooth to be treated is carefully cleaned with a piece of cotton moistened in the same antiseptic, after which the cotton may be removed from the pulp chamber of the tooth. If little of the pulp is found to be alive, this may be extirpated at once, without much pain, by means of a fine nerve drill, rapidly revolving in the head-piece of the dental engine. Previous to the introduction of any instrument into the pulp canal, the latter should be flooded with pure electrozone, and no air should be allowed to enter the pulp canal after the extirpation of the pulp, until it has been thoroughly disinfected. The canal may then at once be filled with safety, and if the filling material has been made sterile, and is not pushed through the apical foremen of the root, the tooth will give no further trouble.

As a mouth-wash, the writer has made use of the antiseptic with gratifying results, although, on account of its disagreeable taste, it is objectionable to some patients. If, however, it is diluted with water, ten to twenty volumes, its taste is not so obnoxious, and in such dilutions Dr. E. A. Martin pronounces it still the most powerful antiseptic known. The writer has made use of it in such diluted form in the treatment of empyema of the antrum, necrosis of the jawbones, alveolar cysts, and pyorrhœa alveolaris, with similar good results.—C. F. W. BODECKER, D. D. S., M. D. S., New York City, in *The Dental Practitioner and Advertiser.*

## THE PREPARATION OF PYROZONE.

Since the preparations of Pyrozone are now being so generally used, I would like to suggest a few thoughts in regard to them. First, as to the care that should be exercised in opening a tube of either the 5 or 25 per cent. to avoid explosions: Place the tube on a block of ice for a few minutes, and hold it in a wet napkin while grinding off the end. Second, To keep it from evaporating after transferring to a glass-stoppered bottle, first coat the stopper with vaseline and insert, then melt parafine and pour over it. That is the only way I have found whereby I can preserve it after once opening a tube. Now, in regard to using them· Of course the soft tissues must be protected by the rubber dam, and the face and eyes well protected when the spray is used from a Pyrozone Atomizer. In using these agents for bleaching, care should be taken that the greater part of the root should be hermetically sealed, or else atoms of oxygen will pass through the apical foreamen and cause considerable pain after the tooth has been filled. I always prefer to seal the root with the best quality of cement and give sufficient time for it to harden, as where the rubber or gutta-percha stopping is used the ether will penetrate to some extent by softening and dissolving it ; at any rate, trouble is very apt to occur if the cavity is immediately filled after using this kind of a root stopping. Your patient will sometimes return with the tooth quite sore, and " quivering." Of course when used to evacuate pulp canal contents, it does not matter how far it may penetrate, as the loosely held atoms of oxygen will exert their force at the point of least resistance which, of course, is in the direction of the cavity, and after pus has ceased to discharge, by simply spraying canals with 3 per cent. Pyrozone, then drying thoroughly with absorbent cotton and hot air, the tooth may be immediately filled, though I think it safer to use a 50 per cent. solution of sodium peroxide, if you wish to practice immediate root filling, or Dr. Schrier's preparation of sodium and potassium, both of which have proven entirely successful in my hands for nearly two years past. The Pyrozone used with the Atomizer will cleanse the chamber and canals, as well as tubuli of dentine more quickly than anything I know of. Of course judgment and care should be exercised in the use of ether of the compounds mentioned, and no operation should be begun upon the teeth, when they are used, until the rubber dam has been first thoroughly adjusted.

These few thoughts are offered in the hope that some one will be helped who has not had quite as long an experience with them as I have.—DR. I. N. CARR, Tarboro, N. C., in *Southern Dental Journal.*

## ON SEPARATING TEETH.

The main objects in separating teeth are to give space for the free use of instruments, whether for filling or examination purposes, and to allow the restoration of the contour of the tooth in filling.

Separation can be effected by either removing a portion of the tooth or by wedging the teeth apart by various materials or instruments ; it is to the latter method I propose to direct the following few brief remarks.

In young subjects the separation of teeth can be accomplished with a certain degree of safety. In the old, such is not the case, the result of wedging sometimes tending to a diseased action in the sockets and premature loss of the teeth. One author relating a case where the inflammation of the alveolar dental membrane caused by the separator spread to the pulp, leading to its destruction.

One should, I think, always consider carefully before separating teeth in a patient over forty, and our judgment should be guided by the condition of the patient's teeth, especially any tendency to pyorrhœa alveolaris, and by the presence of any constitutional condition where repair is not easily accomplished.

When considering the methods of separating teeth one finds they may be roughly divided into gradual and immediate.

For the gradual method tape or rubber is generally used, commencing with narrow breadths and gradually increasing the number till the required space is obtained. It is useful when the space is obtained, to let one or two days elapse before operating, as this will allow the tenderness caused by the wedging to subside to a certain degree.

It is also useful when instructing our patient how to use the tape, to prescribe a little tincture of iodine and aconite, to be applied to the gum over the teeth being separated, as this will also assist in allaying the tenderness.

Of the above, tape and rubber, the former is, I think, in most cases preferable; the disadvantages of the rubber lies in the fact that it works too rapidly and causes a greater amount of inflammation. When, however, the teeth are very close together, it is sometimes impossible to get a strand of tape up, the rubber is then very useful for commencing the separation.

Wood for wedging can be used in exactly the same way as tape, viz., commencing with thin pieces and gradually increasing the thickness. The disadvantage of wood over tape and rubber is that nearly always the operator has to change the thickness of the wood, whereas with the tape the patient is himself able to do it.

In preference to the above they are many who prefer to wedge with cotton, asserting that its action is just as effective and occasions not the slightest inflammation. It is best used as follows:

Take a tuft of cotton and pull it into pieces so that the fibres are parallel to one another. Next reduce one end to a thread by twisting it between the fingers and thumb, pass this between the teeth to be separated, and draw it forward with a pair of tweezers. This gradually separates the teeth with a power which has scarcely any limit, and must be exercised with discretion. The point at which to stop being when there is just a feeling of discomfort.

The ends of the cotton tuft are then cut off pretty close to the enamel, and the saliva moistening the cotton causes it to separate the teeth beyond one's expectation.

Another extremely useful way of separating teeth, especially back ones, is at the first setting to prepare the cavity roughly and fill the space up with some guttapercha, bringing it against the side of the adjacent tooth. The saliva causes the guttapercha to swell, and to separate the teeth. The cheaper forms are the best, since there is a greater tendency for them to swell.

When several teeth have to be separated, Mr. Coffin sometimes employs one of the expansion plates.

After wedging by the gradual method, the teeth are often found very tender, when this is the case the operation of filling should not be undertaken but the space should be kept, until the tenderness has passed off, by filling it up with some soft guttapercha.

Of immediate methods for separating teeth that by means of wooden wedges is very simple. It is accomplished by cutting two narrow wedges of very fine grained wood, such as orange or boxwood, and inserting them between the teeth, one at the neck and the other at the cutting edge. These are then alternately tapped with a mallet until enough separation is obtained. The wedge between the teeth at the cutting edge is then removed and the other left *in situ*.

Another method of inserting wooden wedges is with special forceps made for the purpose, one blade conveying the wedge the other a pad of rubber to protect the enamel from injury during the operation of introducing the wedge.

In conclusion, it will, I think, be found best as a rule to commence separation by one of the gradual methods, completing with one of the immediate, and it should never be lost sight of that when filling after wedging, the main way to avoid pain is to keep the teeth perfectly steady.—J.F. Colyer, L. R. C. P., M. R. C. S., L. D S., Demonstrator to the Dental Hospital of London, in *The Dental Record.*

## NEURALGIA.

When a dentist speaks of neuralgia, he means a nerve pain of a more extended character than odontalgia, or toothache. When a patient complains of pain of a shooting character in the head, the ear or arm, we say he has neuralgia; we examine his teeth carefully, and we generally find a decayed tooth, or teeth, or stumps, which indicate the locality of the nerve lesion which gives rise to the pain. We remove the decayed tooth and we generally cure the patient.

Some little time ago I had a lady patient who had suffered severely from neuralgia in the head ; she had been under treatment by a physician for many months ; she had been to Smedley's Hydro. for nine months to get up her general health and tone ; she had had a course of massage, I suppose on the same principle that muscular rheumatism would be treated, and which is treated effectually in that way—but with no improvement. The racking sleep-destroying pain still continued. She did not believe it could be her teeth, but came to have them examined as a forlorn hope.

There was an upper wisdom tooth decayed, but I diagnosed the lower wisdom as the offender,which was apparently quite sound. This tooth was very sensitive to hot air applied by the hot air syringe, and to cold water. But she declined to allow me to extract it, and decided to have the upper tooth out. It was decayed, and of no great value, so against my advice I took it out. In a week or two she returned ; there had been no improvement. Had the upper wisdom tooth been a sound and useful tooth, or had been capable of being made in one filling, I should, of course, have refused to extract it. I look on the dentist as an arbitrator between the patient and his impatience. The one is a professional and the other an amateur. The proverb, " Every man knows where his own shoe pinches," does not hold good in regard to teeth. On this second visit I was able to get my way, and extracted the lower wisdom. I found the nerve cavity full of puss. We all know how painful a simple gathering on the finger may be when the finger swells, and there is heat and great congestion. The tooth cannot swell, and we get the congestion in the confined pulp chamber, consequently there is compression of the delicate nerve filaments, and we get extreme pain. But the pain may not be localized to the tooth, and we get what we call reflex neuralgia. Neuralgia might also be caused by the disposition of secondary dentine in the pulp chamber.

Neuralgia which may sometimes be relieved by dressing the cavity in some tooth—destroying the pulp, clearing it out and filling it. A young lady came with intense neuralgia, saying she thought she would go mad. She paced up and down the surgery, and demanded almost instant extraction of an upper laterial tooth. This was the only decayed tooth she had, and would have left an unsightly gap, and she would have had to be bothered by a plate for one tooth. I injected morphia in her arm and dressed the cavity—destroyed the nerve and eventually filled the tooth with gold, saving it for appearance and mastication. A gentleman brought his doctor to give him an anesthetic to have an upper molar out, which I stoutly refused to extract, though under threat that he would go elsewhere, and find a dentist more amenable to reason. But he gave way and I saved that tooth.

Another obscure case of neuralgia is the malposition of teeth. A medical man of fifty years complained of great pains all over his head. He dare not take chloroform or even gas. I believed the trouble to be in the upper right cuspid, under which was a large swelling. I injected cocain and went for the stump, but the instrument slipped and I failed. I went deeper and failed again. Then with my saw edge forceps I trephined till I had a very firm hold, and it took a long and strong pull, but when it came I found I had a large cuspid which had never been erupted. It was lying nearly horizontally in the aveolus. The other case was nearly similar, in a patient of 45, whose cuspid was under sound bicuspids.

A third of malposition, causing great neuralgic pain, was that of the wife of a coachman, aged about 45. She had no bad teeth, and apparently a healthy mouth. All her teeth were present except the left upper wisdom. The second molar was decayed in the crown. I carefully tapped this--she winced. On extraction I found the palatal root broken off nearly to the neck. The fracture was not flat and even across, but slightly cupped, evidently not fractured but absorbed, as the roots of temporary teeth are. To prove this I immediately extracted the wisdom tooth, which was underlying, and it fitted exactly the second molar palatal root. The same thing sometimes occurs with lower wisdoms, which will burrow under the gum and eat their way in the pulp chamber of the lower second molar. I have the following notes in my hospital case book for last year. Mrs. R., 34, neuralgia 11 years; use of arm gone for 3 or 4 years—3 or 4 days at a time—had not been able to attend to her hair for 5 years. I extracted teeth. Three weeks afterward she was better and had regained the use of her arm.

Salter gives a case where the right arm was seriously affected—became nearly powerless, and was constantly in a state of aching pain—the patient could hardly grasp or hold anything in her right hand. Facial palsy occurred with dimness of the right eye. A week later she had complete facial paralysis, deafness, and her right arm as above. Upper right wisdom tooth removed. Before patient left the house pain of arm and powerlessness had vanished. Patient quite cured in a fortnight.—HENRY BLANDY, L. D. S., Edinburgh, in *Dental Record.*

## THE PRACTICAL PLACE.

Dr. Hugenschmidt recommends the only practical poultice that can be used in alveolar abscess, a fig boiled in a solution of borac acid and cut in halves, and the surface sprinkled with powdered boric acid. It will in most cases cause the abscess to discharge into the mouth. Should the abscess be far advanced and threaten to break through the cheek, then apply an ice compress with the above.—*Journal fur Zahnheilkunde.*

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False Teeth—How They are Made and of What Material They are Composed.—"Where do false teeth come from?" said a well known bone importer, echoing a question that I had put to him. "Wouldn't you like to know? Most people, I imagine, think that all false teeth are made from ivory. That is quite a mistaken idea, as the majority of false teeth are now made from anything but ivory. We import large quantities of walrus' tusks for no other purpose than that they may be made into false teeth. You go into some big dental establishment where teeth are made and you will doubtless find the remains of walrus' tusks lying around and, indeed, a highly polished tooth made from a walrus tusk is just as handsome, although not so lasting, as an ivory one.

"A dentist once came to me for an elephant's tusk, from which a good set of permanent teeth might be made for a wealthy client of his. He was to spare no expense. I found him a tusk, which, being an especially good one, I sold for $12.50 a pound, the usual price being from $2.50 to $3.50 per pound. I afterward learned that the dentist made $500 out of that set of teeth.

"Of course, it would be impossible for dentists to sell teeth so cheaply as they do now if the teeth were all made from elephants' tusks. As a matter of fact, so many people are now wearing false teeth that I doubt if the ivory suitable for this purpose would never be found. (I am told a good many false teeth are now being made from vegetable ivory, ivorine, etc.) If so, the price of teeth must naturally go down, and in time the toothless one will probably be able to replenish his mouth for an absurdly low sum. A set of teeth for $1.25," concluded the dealer, laughing, "would create a boom in false teeth." —*Philadelphia Times.*

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### Filling Lower Wisdom Teeth.

"An annoying operation to successfully perform is filling a lower wisdom tooth that cannot, for half a minute at a time, be kept free of saliva. Such a case presented in a young lady, of highly nervous temperament, whose flow of saliva was excessive. Placing of the dam was impracticable, and napkins placed in the mouth would almost immediately become saturated. This annoyance was overcome through the action of sulphate of atropin, a dose of which ($\frac{1}{120}$ grain) I had her to take three quarters of an hour before her next appointment. At that time I found the mouth very dry, though not uncomfortably so for my patient. This salt of atropin has a much better effect on the secretion than the ordinary alkaloid. Its manifestation lasts from four to five hours.—H. OTIS LOGUE, D.D.S., New York.

## PREPARATION OF AMALGAM.

Add a teaspoonful of hydrochloric acid to a pint of water. Pour a sufficient quantity in a wedgewood mortar, add the alloy, stir with pestle; add the mercury and amalgamate. Then wash in clear water; all the black oxid will be cleansed from each particle of the alloy; the amalgam will act quicker and stronger and will discolor less.—BENJ. LORD.

## THINGS PROSTHETIC.

In ninety nine per cent. of mouths the center of the palate is hard and unyielding, in fact the only portion of the upper jaw which does not change from absorption or yield to pressure. Unless provision is made for it the plate will sooner or later rock. This should be remedied by a "relief" in metal plates, of a thin film of wax on the model, extending well up on the anterior portion to near the margin of the process, and to within a quarter of an inch of the rear of plate. In a rubber plate the relief can be made by burring or scraping the plate.

There are more failures in artificial dentures from *faulty articulation* than from any other cause. To guard against this, in adjusting a denture in the mouth, see to it that none of the six anterior teeth touch—in fact leave a margin of space. This will prevent the tilting of the plate from the rear. Be sure the bicuspids and first molars on both sides meet uniformly; have no pressure on the second molar, and especially if the lower occluding molar leans forward, as it would crowd the denture forward.

In arranging the *lower* teeth, commence with the second bicuspid so as to insure a perfect interlocking of the cusps. The fronts must be accommodated to the space allotted to them by crowding or overlapping, if needed.

In ordering teeth from the dealer, see that bicuspids and molars are provided that have a good length of porcelain *above* the pins, so that if necessary to grind, in articulating, the porcelain will not be ground away. The teeth will also present a more natural appearance. Insist upon this from your dealer.

If you desire to restore the expression of the mouth which has been sacrificed by the extraction of the cuspid teeth, remember this invariable rule, viz.: the plate can and should be worn higher over these teeth than elsewhere, and the artificial gum made fuller. Leave the necks of the cuspids slightly fuller than the other teeth. Finish the rubber with a festoon around the necks of the teeth.

In selecting teeth for metal plate and crown work, if you desire *strength*, use the perpendicular rather than the cross pins, and they are less liable to crack in soldering, and do not let your dealer give you anything else.

In polishing metal work, use *oil* with your pumice both on the felt and the brush. To reach all the depressions and interstices, drive a pine stick into the lathe chuck made for it and with a sharp knife turn it to a blunt point.—L. P. HASKELL, Ohio.

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WITH the powers well preserved, some accomplish as much after sixty as they did in all their life before. The following incidents, put in the form of poetry, give us a wholesome lesson:

"'It is too late!' Ah, nothing is too late
Till the tired heart shall cease to palpitate.
Cato learned Greek at eighty; Sophocles
Wrote his grand *Œdipus*, and Simonides
Bore off the prize of verse from his compeers
When each had numbered more than fourscore years;
And Theophrastus at fourscore and ten
Had but begun his *Characters of Men;*
Chaucer, at Woodstock with the nightingales,
At sixty wrote *The Canterbury Tales;*
Goethe, at Weimar, toiling to the last,
Completed *Faust* when eighty years were past.
These are indeed exceptions; but they show
How far the gulf stream of our youth may flow
Into the arctic regions of our lives,
Where little else than life itself survives."

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## TALENT AND TACT.

It is not so much talent as tact that gives us success among men. Talent is often for the masses too ponderous in its complex dignity, but tact trips along accomplishing its purpose by a smile. Talent is a marvelous gift, and if improved makes a wonderful man of astuteness, solidity and grandeur; but tact is more cunning than wonderful, and prefers a soft step to a solid one, and popular success to grandeur. We praise talent, but we laugh at tact. Talent is convincing, tact is shrewd; talent is mighty, tact is cunning; talent is convincing, tact is insinuating.

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## HOW TO MAKE LOWER PLATES SUCK.

I am asked to be more specific than in a former article. Now then:

Get a perfect impression with the parts in their normal shape. This may take personal showing; it certainly takes considerable experience, and always the greatest care.

Make a model of uniform density, smooth and glossy on its surface, and so hard you can't drive a common brass pin into it. This takes the greatest care, but it can be done with experience and first-rate plaster, and in difficult cases it is absolutely essential.

Flask with pressure so light as not to force the model out of shape. Vulcanize thoroughly at lowest temperature, and give your case from four to six hours to cool off slowly, that your plate may not warp from imperfect crystallization.

Trim the plate so its dull, well-rounded edges don't bear more on the side muscles than on covered parts, nor press too hard on them. Nothing in all dentistry requires better judgment, more experience or greater care than trimming a plate rightly. In lower plates see that your edges are blunt, well rounded from both sides, and smooth.

See that your articulation is perfect, the bicuspids and molars all "occluding" at the same time, under light pressure. Don't force an articulation by hard hitting. The anterior teeth should hardly touch.

Those described some time ago by Dr. Haskell, where the cheek muscles are higher than the alveolar rim, the lower plate should be of molded metal, made with the care essential in that kind of work.

Now boys, (I say boys, for the old dentists know all this, but won't tell it), if these instructions are perfectly carried out in detail, step by step, any lower plate will have some suction, and most of them will stick as well as upper plates of equal areal contact. But a failure in any step may, and in unfavorable cases will spoil all.

All this requires capabilities and time that will bring you above competition in charges with the bunglers, and botchers, and cheap Johns, that constitute largely the profession in mechanical dentistry. (Excuse me from the words "prosthetic" and "denture.")

In such a work you must take things thoughtfully, coolly, slowly and carefully—no "eight plates a day." One plate a day is enough for an old fogy like me; but when I am done she can test her teeth with dried beef to her heart's content, but she pays for it.—Dr. J. W. Green.

### Bleaching Teeth.

Saturate the dentine with strong sodium peroxid, followed by treatment with dilute hydrochloric acid, to neutralize the alkali. Wash with hot water.—E. C. Kirk.

### Treating Small Root Canals

Many canal roots met with in practice are small, indistinct, and difficult of access, so that they cannot be thoroughly cleared. For many years I have used a ten per cent. solution of bichlorid of mercury in absolute alcohol, applied to the pulp chamber on cotton, wool or other fiber with great success. But since Dr. Miller's paper, read at the Chicago Congress, in 1893, advocating the use of a pellet formed of one-tenth of a grain each of bichlorid of mercury and thymol, I have adopted this method in some two hundred cases, but using pellets of only one-fifteenth of a grain, and by far the larger number of cases were very successful. I do not advocate this treatment where the canal could be got at, as I am strongly in favor of filling all root canals where possible, but in almost inaccessible positions the plan suggested is valuable.—*Dental Record.*

An excellent and quick way of making a solid dummy, as suggested by Dr. Hinman, is as follows: Select a plain rubber tooth of proper size, and press it into an asbestos block, making the depression deep enough to cast the full crown; fill this with gold scraps, melt with blow-pipe, and while in this condition press down with smooth metal surface. The result will be a perfect dummy, requiring little polish; or a mould of plaster and marble dust will give the same result.

## OBITUARY.

### Sir John Tomes.

Born March 21, 1815, on Weston-on-Avon, Gloucestershire, died July 29, 1895, at Upwood Gorse, Caterham Valley, Surrey, England, in the eighty-first year of his age.

### Dr. J. Lehman Eisenbrey.

Born in Bucks County, Pa., in 1842, died August 20, 1895, in the fifty-third year of his age.

# THE POINT OF POLISH.

We have a word to say to the profession on the point of polishing artificial teeth after grinding.

The Johnson & Lund teeth have pre-eminently this quality, that they *can be ground, and a polish restored equal to that which originally existed.*

We have demonstrated this many times in our factory, and we will gladly demonstrate it for you—or you can readily do it yourself.

Take a Johnson & Lund tooth and grind off some of the surface—or grind it in half, it makes no difference—and then polish it, and you will find that it will take a polish so perfect that only by the shape can you tell where the grinding was done.

The reason is manifest. That the Johnson & Lund's tooth is the strongest is admitted. This is because it presents the most perfect union of materials, and only in such perfect union can a porcelain be obtained capable of taking a perfect polish.

# GENERAL INDEX FOR 1895.

A

Anæsthesia, Fiftieth Anniversary of the Discovery of . . . . . . . . . . 7
Anæsthesia. Local. . . . . . . . . . 95, 49, 35
A Hint. Rubber for separating Teeth . . 42
Abscess and Root Filling. The Dental Pulp . . . . . . . . . . 47
Anæsthesia. Local. Method of Inducing by Cocaine . . . . . . . . . . . . . . . 49
Amalgam. Dr. Mayer's Manner of Working. . . . . . . . . . . . . . 4[illegible]
Amalgam. To Repair a Break . . . . . . 53
Arsenious Acid for Killing Pulps 54
A Compend of Dental Prosthesis and Metalurgy . . . . . . . . . . . . 56
Another Use for Trichloracetic Acid . . 58
A Thin Tin Model. How to Get . . . . 59
A Potato Retort. . . . . . . . . . . . . . 60
A Removable Tooth Crown . . . . . . . 62
An Antiseptic Dentifrice. . . . . . . . . . 63
Anæsthesia. The History of . . . . . 67
A Valuable Method of Taking Impressions for Crown and Bridge Work . . . . . . . 2
Aluminum. Problem of Soldering . . . 85
Accurate Modelling Compound Impressions . . . . . . . . . . . . . 93
Anæsthetic. Hypodermic . . . . . . . . . 94
A Root Filling. Salol as . . . . . . . . 95
A Useful Hint . . . . . . . . . . . . . 95
Articulating a Set of Teeth. To do it Properly. . . . . . . . . . . . . . 115
A New Alloy Resembling Gold . . . 12[illegible]
Alveolar Abscess . . . . . . . . . . . 124
An Easy and Safe Method of Removing Pulps after Devitalizing . . . . . . . . 125
A New Liquid Glue. . . . . . . . . . . 126
Arsenic. To Lessen the Pain From . . 1[illegible]
Amalgam . . . . . . . . . . 1[illegible]
A Most Excellent Cleansing Fluid. . . 160
Antiseptic Mouth Wash . . . . . . . . [illegible]
Arsenical Applications . . . . . . . . . 162
Arsenical Applications. Protection Against. . . . . . . . . . . . . . . . . . 162
Amalgam. Preparation of . . . . . . . . 191

B

Book Notices . . . . . . . . . 159, 120, 91, 55
Bleaching with Pyrozone . . . . . . . . . 58
Black Rubber Plates. Polishing . . . 61
Blood Poisoning. A Peculiar Case . . . . 62
Breath. Offensive Odor of the . . . . . 96, 63
Bleaching Discolored Teeth. Report of New York Society . . . . . . 94
Bichloride of Murcury. The Best Germicide . . . . . . . . . . . . . . . 95
Breath. For Fetor of the . . . . . . . . . 96
Bleaching Teeth . . . . . . . . . . . . . 194
Bridge Work. Construction of Crown and 1

C

Construction of Crown and Bridge Work 1
Clean Joints. How to Get . . . 48
Cocaine. Method of Inducing Local Anæsthesia by . . . . . . . . . . . . . . . 49
Chloro Percha . . . . . . [illegible]
Cleaning Teeth. Trichloracetic Acid for 61
Contour Fillings Made in the Laboratory.. 61
Crown. A removable Tooth . . . 62
Cement Fillings. Protection of . . . 64
Clamps which Rock or Slip. To Secure . 65
Copper Amalgam. Blacking Effect in Young Teeth. . . . . . . . . . . . . . . 66
Commencements . . . . . . . 120, 90
Connecticut Quarterly . . . . . . . . . . 91
Catching's Compendium. . . . . . 91
Compound Cocaine Pigment . . . [illegible]
Crowns. Fitting . . . 128
Charges of Young Dentists . . . [illegible]
College Notices . . . [illegible]
Chapin A. Harris Memorial Fund. . . [illegible]

Cleansing Fluid. A Most Excellent . . .160
Congested Pulps. Devitalization of . . . . 162
Correspondence in Reference to the Opening of Twenty-five Per Cent. Pyrozone Tubes . . . . . . . . . . . . . . . . . . . 169

D

Discovery of Anæsthesia. Fiftieth Anniversary of the . . . . . . . . . . . . . . 7
Dr. Brockway's Idea for Filling Labio-Cervical Cavities . . . . . . . . . . . . . . 41
Disks. Sand Paper . . . . . . . . . . . 54
Dental Digest. . . . . . . . . . . . . . . 56
Devitalized Pulps. Treatment of Teeth with . . . . . . . . . . . . . . . . . 60
Dentrifice. An Antiseptic . . . . . . . . 63
Diagnosis of Pulp Stones . . . . . . . . . 66
Dental Societies. . . . . . . . . . . . 100, 91
Disks of Sole Leather for Polishing Fillings 92
Destroying Pulps. . . . . . . . . . . . . . 93
Dentistry. Painless . . . . . . . . . . . . 97
Devitalization of Congested Pulps . . 162
Dental Association of New South Wales. . 169
Dummy. Quick Way of Making a Solid. . 194

E

Extracting Nerves. . . . . . . . . . . . . 53
Electrolysis to Obtund Sensitive Dentine . 60
Extensive Contour Fillings Made in the Laboratory . . . . . . . . . . . . . . . . 61
Easy Removal of Tartar . . . . . . . . . . 63
Erosion. To Check . . . . . . . . . . . . 64
Erupting Third Molars. Treatment of . . 92
Exercise to the Teeth. Need of. . . . . .120
Electrically Shocked. First Aid to the . . 123
Enlarging Root Canals. Reasons for . . . 127
Electrozone . . . . . . . . . . . . . . . . 1[illegible]

F

Fiftieth Anniversary of the Discovery of Anæsthesia. . . . . . . . . . . . . . . . . 7
Fillings in the Lingual Cervix or Lingual Pit . . . . . . . . . . . . . . . . . . . 53
Filling Teeth. The Use of the Separator in. . . . . . . . . . . . . . . . . . , 54
Filling Teeth. To Make Adhesive tin for.. 62
Fungous Growth of the Pulp . . . . . . . 92
For Fetor of the Breath . . . . . . . . 96
Fusible Alloy in Prosthetic Dentistry. The Value of. . . . . . . . . . . . . . . . . 99
Filling Pulp Canals. . . . . . . . . . . . . 11[illegible]
For Removing Warts. . . . . . . . . . . . 122
First Aid to the Electrically Shocked . . . 123
For Very Soft Teeth . . . . . . . . . . . 125
Fitting Crowns . . . . . . . . . . . . . . 128
Full Cases. Impressions for. . . . . . 160
False Teeth. How They Are Made and of What Composed . . . . . . . . . . 1[illegible]
Filling Lower Wisdom Teeth . . . . . . 190

G

Gutta Percha Pink . . . . . . . 52
Glass Stoppers. To Remove . . . . 61
Gutta Percha and Oxyphosphate for Setting Crowns . . . . . . . . . . . . 62
Gutta Percha Fillings. To Make Watertight . . . . . . . . . . . . . . 65
Glue. A New Liquid . . . . . . . . . . . 126

H

How to Get Clean Joints . 48
Hands. Cosmetic for Those Who Desire Soft White . . . . . . . . . . . . 63
Hypersensibility of the Teeth . . . . . . 65
How to Use Trichloracetic Acid . . . . . . 66
Hypodermic Anaesthesia . . . . . . . 94
How to Induce Children to Clean Their Teeth . . . 12[illegible]
How to Make Lower Plates Stick . . . . [illegible]

I

Impressions. To Prevent Nausea in Taking . . . 34
Impressions for Full Cases . . . 160
It Is Too Late . . . 192

K

Keeping the Gingival Portion of a Cavity Dry . . . 126

L

Local Anæsthesia . . . 122, 49, 55
Labio-Cervical Cavities. Dr. Brockway's Idea for Filling . . . 41
Leading Questions and Answers for Dental Students . . . 42, 133, 164
Local Anæsthesia by Cocaine, Method of Inducing . . . 49
Local Anæsthetic . . . 129, 95
Local Anæsthesia. New Means of . . . 122
Lower Plates. How to Make Them Suck . 193

M

Matrix. How to Use On a Proximate Cavity . . . 34
Method of Inducing Local Anæsthesia by Cocaine . . . 49
Memoranda Relating to the Discovery of Anæsthesia . . . 57
Mounting Disks and Points . . . 58
Medicine for Sterilizing and Treating of Pulpless Teeth . . . 64
Mouth Poultices . . . 65
Matrix. A Simple Band . . . 92
Modelling Compound. Softening of . . 93
Modelling Compound Impressions. Accurate . . . 93
Matrix for Proximal Cavity When Adjoining Tooth is Missing . . . 97
Method of Removing Pulps After Devitalization. An Easy and Safe . . . 125
Mouth Wash. Antiseptic . . . 161
Meetings . . . 169

N

Nausea. To Prevent in Taking Impressions . . . 34
Nerves. Extracting . . . 53
Need of Exercise to the Teeth . . . 121
New Alloy, Resembling Gold. A . . . 122
New Means of Local Anæsthesia . . . 122
New Jersey State Dental Society. Silver Anniversary . . . 139
National Association of Dental Examiners. 170
National Association of Dental Faculties . 173
Neuralgia . . . 187

O

Officers and Committees of the Pennsylvania State Dental Society . . . 46
Offensive Odor of the Breath . . . 63
Orange Wood Wedges . . . 64
Overhanging Gum of Third Molar. Removal of . . . 98
Opening Pulp Canals. Sulphuric Acid for . . 113
Oxyphosphate Cement. Rules for the Setting of . . . 130
Old Vulcanite Plates. To Remove Teeth from . . . 161
On Separating Teeth . . . 185
Obituary Notices . . . 194

P

Pain. The Mastery of . . . 18
Practical Points . . . 52
Pink Gutta Percha . . . 52
Plaster of Paris. Directions How to Use 54
Pamphlets Received . . . 168, 57
Pyrozone for Bleaching Teeth . . . 58
Polishing Black Rubber Plates . . . 61
Pulpless Teeth. Medicine for Sterilizing and Treating of . . . 64
Poultice for the Mouth . . . 65
Plaster. To Make Set Hard . . . 65
Pulp Stones. Diagnosis of . . . [illegible]
Pyrozone for Inflammation of the Mucous Membrane of the Mouth . . . 66
Problem of Soldering Aluminum . . . 85
Polishing Fillings. Sole Leather Disks for 92
Pulp Capping . . . 92
Pulps. Removal of Devitalized . . . 93
Press Back the Festoons . . . 96
Painless Dentistry . . . 97
Pigment. Compound Cocaine . . . 98
Pulpitis. Directions and Instructions . . 98
Prosthetic Dentistry. The Value of Fusible Alloy in . . . 99
Pulp Canals. Filling . . . 119
Pulp Tissue in Root Canals. Removal of 161
Protection Against Arsenical Application . . 162
Pyrozone Tubes 25 Per Cent. Opening . . 169
Poultice for Alveolar Abscess . . . 190
Preparation of Amalgam . . . 191
Protection of Cement Fillings . . . 64

Q

Questions and Answers for Dental Students . . . 42, 133, 164
Quick Way of Making a Solid Dummy . . 194

R

Root Filling. The Dental Pulp, Abscess and . . . 47
Rubber Dam. The application of the . . . 54
Removal of Devitalized Pulps . . . 93
Removal of Overhanging Gum of Third Molar . . . 98
Removing Warts . . . 122
Reasons for Enlarging Root Canals . . . 127
Rubber Dam. To Secure . . . 130
Rules for the Setting Up of Oxyphosphate Cement . . . 130
Removal of Pulp Tissue in Root Canal . . 161
Root Canals. Treating Small . . . 194

S

Separating Teeth with Rubber. A Hint . 42
Sandpaper Disks . . . 54
Sensitive Dentine to Obtund by Electrolysis 60
Setting Crowns with Gutta Percha an Oxyphosphate . . . 62
Steel Instruments. To clean . . . 62
Sensitive Dentine. To obtund . . . 63
Salivary and Sanguinary Calculi . . . 83
Soldering Aluminum. Problem of . . . 85
Sole Leather Disk for Polishing Fillings . 92
Simple Band Matrix . . . 92
Softening Modeling Compound . . . 93
Salol, as a Root Filling . . . 162, 95
Saving an Old Tooth . . . 110
Sulphuric Acid for Opening Pulp Canals . 113
Soft Teeth. For Very . . . 125
Simple Method of Sterilizing Water . . . 125
Silver Anniversary of the New Jersey State Dental Society . . . 139
Stop and Think . . . 168
Separating Teeth . . . 185
Small Root Canals. Treating . . . 194

T

To Check Erosion . . . 64
To Strengthen Plaster Teeth on Models . . 64
To make Plaster Set Hard . . . 65
To Make Gutta Percha Fillings Water-Tight . . . 65
To Secure a Clamp which Tends to Rock or Slips off a Tooth . . . 65
The History of Anæsthesia . . . 67
Taking Impressions for Crown and Bridge Work. A Valuable Method of . . . 82
Treatment of Erupting Third Molars . . . 92
To Make a Pin Exactly Fit a Root . . . 93
To Clarify Wax . . . 97

The Value of Fusible Alloy in Prosthetic Dentistry . . . 99
The Immediate Treatment of Uncovered Pulp . . . 104
To Properly Articulate a Set of Teeth . 115
Tooth Paste . . . 161, 124
To Secure the Rubber Dam . . . 130
To Lessen the Pain from Arsenic . . . 130
The Moon's Story . . . 142
To Remove Teeth from Old Vulcanite Plates . . . 161
Tidiness . . . 163
Treatment of Vulcanite . . . 176
The Preparation of Pyrozone . . . 184
Things Prosthetic . . . 191
Talent and Tact . . . 192
Treating Small Root Canals . . . 194
The Academy of Stomatology . . . 17
The Mastery of Pain . . . 18
To Prevent Nausea in Taking Impressions 34
To Use a Matrix on a Proximal Surface . 34
The Dental Pulp, Abscess and Root Filling 47
Translation . . . 50
The Use of Separators in Filling Teeth . . 54
The Application of the Rubber Dam . . . 54
Transactions of the Worlds' Columbian Dental Congress . . . 56
To Polish Aluminum . . . 57
Trichloracetic Acid. Another Use For . . 58
To Reswage a Metal Plate Having the Teeth on . . . 59
To Get a Thin Tin Model . . . 59
Treatment of Teeth with Devitalized Pulps 60
To Clean Steel Instruments . . . 62
To Make Adhesive Tin for Filling Teeth . 6
Tooth Crown. A Removable . . . 62
Trichloracetic Acid. To Use in Lieu of the Rubber Dam . . . 63
To Obtund Sensitive Dentine . . . 63
Tartar, Easy Removal of . . . 63

U

Uncovered Pulps. The Immediate Treatment of . . . 104

V

Vulcanizers. Direction for the Care of . . 54
Vulcanite and its Treatment . . . 176

W

Working Amalgam. Dr. Mayer's Manner of . . . 46
Wedges. Orange Wood . . . 64
Watt's Fusible Metal for Cast Plates. Formula of . . . 66
Wax to Clarify . . . 97
Working for Dollars and Cents . . . 117
Wedging Teeth with Rubber . . . 119
Warts for Removing . . . 122
Water. Simple Method of Sterilizing . . . 125
What Shall We Eat . . . 127
Wisdom Teeth. Filling Lower . . . 190

Y

Young Dentists and Their Charges . . . 131

THE

# Dental Office and Laboratory.

FOURTH SERIES.

Vol. X. PHILADELPHIA, JANUARY, 1896. No. 1.

## THE CONSTRUCTION OF ARTIFICIAL TEETH.

By Theodore F. Chupein, D.D.S., Philadelphia, Pa.

### IMPRESSIONS.

The first effort is the taking of the impression. On the perfection of this depends subsequent success. The impression cup should assimilate as nearly as possible to the form of the mouth. If the mouth be flat the impression cup should be flat; if the roof of the mouth be high an impression cup which corresponds to this form should be selected. The cup should be about a quarter of an inch larger than the mouth or gum on which it is to be used. We do not approve the plan of taking an impression in wax, and afterwards using this impression as a tray wherein plaster of Paris is put. If plaster of Paris be the material selected to take the impression, the posterior part of the cup should be so arranged with a piece of base-plate wax fastened to it, with heat, as to prevent the escape of the plaster into the fauces. In mixing the plaster for the impression, the plaster is added to the water, not the water poured on the plaster. To make the mouthful as little disagreeable as possible, a pinch of salt, no more than would pile on a dime, may be added to the creamy batter at the last moment. This causes the plaster to set quicker, so that the tray is kept in the mouth a shorter time. When adding the plaster to the water in the bowl, it should not be stirred until every particle of it is well water-soaked. There is no necessity of making the batter thick, as by so doing the operator is unnecessarily hurried, and failure is frequently the result. The batter should be creamy, and when the thickening is observed the cup is introduced into the mouth. If the aperture be small and the maxilla large, the cup should be introduced side-wise, pushing out the cheek on one side, while the lips are brought over the other side. The plaster should not be piled up in the cup, but should be on a level with its rims. If a judicious selection of the cup has been made, the cup will contain sufficient plaster to reach every part of the gum. When the cup is introduced in the mouth, the handle should be on a line with the nose. The back part of the cup should be pressed against the roof of the mouth *first* and the front part of it brought up *afterwards*. While the middle finger of the left hand holds the cup steadily in position, the lips are raised with the fingers of the right hand in order to permit the escape of air, after which the lips are lowered and the plaster matted against the outer parts of the alveolar ridge by pressing against the lips with the finger. The cup should be held *immovably* against the gums and not permitted to move until the plaster has set hard. With plaster prepared for taking impressions, to which salt has been added as advised, by counting 500 the impression will be generally hard enough to remove. As long as the plaster in the bowl, however, shows a glistening surface, although it may break with a clean fracture, it is not safe to remove the impression from the mouth. The plaster in the bowl should have a dull, dry surface before making this attempt. In edentulous mouths, where the arch is high, it is a good plan to daub a little plaster, with the spatula, over this part, as it frequently happens that air may be confined at this point, if reliance is had only on what is in the tray, which would, in such case, prevent a perfect impression.

To remove the impression from the mouth, by raising the lips so as to admit air between the plaster and the gum surface, this may effect it. At times, however, it adheres so firmly that this will not effect the removal. By holding up the lips and squirting water from the dental syringe between the lips and the impression, and at the same time working the cup up and down, by holding the handle, the removal will be accomplished. The firm adhesion of the impression is not always an indication that the plate made from such an impression will adhere as firmly. When the gums are uniformly hard, plaster is indicated as the proper material to use; but when the gum is hard and soft in different places, or when the gum is soft all over, plaster alone should not be used. We have been at considerable trouble to overcome these annoying causes, doing the work over and over in order to attain sufficient adhesion that the plate could be worn with comfort. Our first procedure after taking a plaster impression of an edentulous mouth is to make the model.

On this model we trace the line on which the plate is to rest. A wax base plate is moulded on the model and trimmed, with the hot wax spatula, to the line which was marked on it. At the median line, next the soft palate, the wax base plate is slightly thickened. Inlets are cut at this point, also at each tuberosity of the maxilla of the model. The inlet at the median line is made larger, those at the tuberosities smaller. This is shown by Fig. 1. This being done the model is varnished on all surfaces except that covered by the base-plate. When the varnish has dried the base-plate, and all parts of the model are coated liberally with fine French chalk applied with the end of the forefinger. Modeling compound is then softened in hot water and formed into a ball. This is placed over the wax base-plate on the model, and so manipulated with the fingers that the whole base-plate as well as much of the model is covered by it. This is shown by Fig. 2. When the modeling compound has hardened it is separated from the model, and the wax base-plate removed. Sometimes this will remain on the model, sometimes it will adhere to the modeling compound. In either case it is removed. The inlets of the modeling compound are cut out so as to afford an easy access to the face of the model. The face of the model is now rubbed over with French chalk and the excess dusted off with a soft badger tail brush or camel hair pencil, and the inner surface of the modeling compound mould (Fig. 3) treated in the same way. The object of thickening the base-plate at the median line as advised, is to afford a larger and easier access to the face of the model. This being done, the modeling compound mould is replaced on the model, as shown by Fig. 2, and with a piece of rag the whole is tightly wrapped, only leaving the inlets at the back part of the model exposed. Crown metal or fusible alloy, melting at no greater heat than 160° Far., is melted and poured into the median inlet. The other two inlets are only intended for the escape of air. When the metal is cold, the modeling compound mould is removed and the plate, formed of fusible alloy, is taken from the face of the model, which it intimately fits. If this plate be placed in the mouth, and the gum from which the impression was derived, was hard, and the impression perfect, the plate will

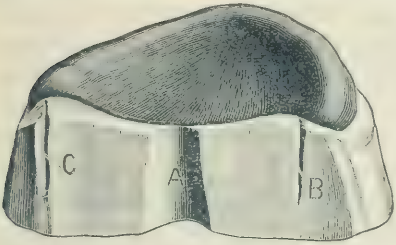

Fig. 1.

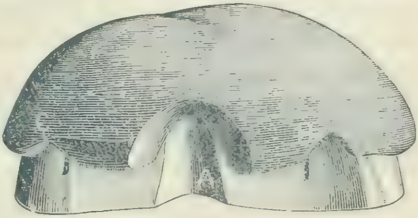

Fig. 2.

adhere so firmly that it will be removed with difficulty from the gums.

But suppose it should not adhere firmly, what are we to do? This may be due to an inordinately hard point forming a pivot, and may be overcome by relieving the inner part of the plate at the point where this pressure is greatest. If this should fail to produce proper adhesion, proceed as follows: The plaster impression having been saved, lay smoothly in it a piece of modeling compound. The modeling compound for this purpose is such as is sold at the depots as "modeling compound for base plates." It is in sheets about $\frac{1}{8}$ of an inch thick. A piece of this is softened and laid smoothly in the impression. By heating the plaster impression the modeling compound is made to adhere to it. The plaster impression, treated with the coating of modeling compound as described, is then uniformly softened over the blaze of the spirit lamp on the bracket table, and quickly, while it is soft, conveyed again into the mouth, pressed firmly and steadily against the gums, and firmly and immovably held there until the compound hardens. From this new impression a new model is made, and another plate, which will not fail to adhere, made. Plates like these are admirable for taking "the bite," as they are ridged and adhere immovably to the gums. It may be objected that this procedure is attended with too much trouble; but we answer that there is not one-fourth the trouble of making these plates that there would be if the case were carried to completion without the certainty of proper adhesion when the work was finished. Besides, these plates do not take more than 30 or 40 minutes to construct from the time of taking the impression into the laboratory. Any one afraid of trouble had better give up the practice of Dentistry.

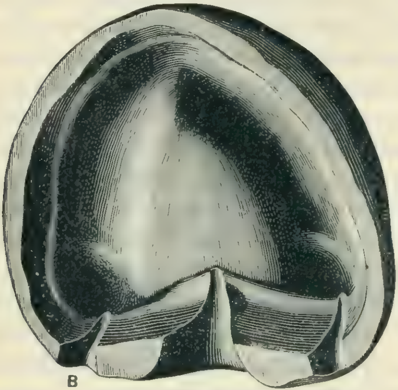

FIG. 3.

[TO BE CONTINUED.]

## GOLDEN ANNIVERSARY OF DENTAL EDUCATION IN PHILADELPHIA.

A complete historical account of this movement is delayed on account of the sickness of the editor. This matter will be prepared for the March issue.

[TWENTY-FOURTH PAPER.]

# LEADING QUESTIONS AND ANSWERS FOR DENTAL STUDENTS.

By Theodore F. Chupein, D.D.S., Philadelphia, Pa.

Q. How should a cavity of decay in a tooth be opened?

A. By using an instrument *larger* than the opening revealed by the decayed spot.

Q. Why?

A. Because, if an instrument of the same size or smaller than the opening be used, such an instrument would sink into or invade, to a greater or lesser depth, the softened decay beneath the enamel opening, which might be sufficient to cause the exposure of the nerve, or if not this, to cause sufficient pressure on it, as to either result in its death or lead to subsequent trouble.

Q. How then would you proceed?

A. By using, successively, larger to smaller burs or corundum points in the dental engine until the mouth or orifice of the cavity is sufficiently enlarged to permit the use of excavators, by which the softened dentine within the cavity is gradually peeled off.

Q. Is this the invariable rule?

A. No. Sometimes the decay is so extensive and the enamel so invaded by it, that to proceed with burs or corundum points would be slow work. In such cases the enamel *may be cleaned* with properly-shaped chisels, always guarding the pressure used to produce this cleanage by placing the thumb or fingers on the tooth being operated on, so as to avoid slipping. After the weak enamel is thus removed, the jagged edges left by the chisels may be made smooth with corundum points or discs in the dental engine.

Q. When the cavity is thus opened, is there any rule for the removal of the decay?

A. The decay should be removed from the sides of the cavity and from the cervical wall, and that which lies over the pulp peeled off afterwards.

Q. Why should it be done in this way?

A. Because, done in this manner, less pain will be inflicted, and if the removal of the decay which overlies the pulp should result in its exposure, such an exposure will be made almost painlessly.

Q. Have you any suggestions to give as to the manner of removing the decay?

A. The excavators should be very sharp and the blades thin. In form the blades should be rounding like a battle axe, not square like a chisel. The rounding form renders them easier to sharpen. Small, sharp excavators inflict less pain than large, dull ones. An excavator should be used, in preparing a cavity, with a *draw cut* or a scraping cut from the pulp towards the orifice rather than with a push cut from the orifice toward the pulp.

Q. Why should you be careful in this respect?

A. Firstly, so as to inflict as little pain as possible; secondly, because when pain is inflicted it acts as an irritant to the pulp which may result detrimentally after the filling is inserted.

Q. Should deep or large cavities excite our suspicion even though no pain is experienced in the preparation of the cavity?

A. It should. For although no actual exposure may have been made or ocularly revealed by the bleeding of the pulp, still there may have been so close an approach to it as to require precautions before the filling is inserted.

Q. What precautions should be taken in such cases?

A. The cavity should be well bathed with carbolic acid, so that this may soak into the dentine. When the surplus is absorbed away a layer of phosphate cement should be flowed over the floor of the cavity, and when this hardens more of the same material, mixed thicker, used for filling the rest of the cavity.

Q. When no pain whatever is inflicted in the preparation of a large or deep cavity, what should be the procedure?

A. The scraping or excavation should be continued until the nerve chamber is reached.

Q. What will be the result then?

A. The pulp will either be found mummified within the chamber and roots, or there will be an oozing of pus from the pulp chamber when the opening is made, both of which showing a diseased condition.

Q, What should then be done?

A. The nerve chamber should be freely opened as well as the roots and disinfectants, germicides and deodorizers used to remove all septic conditions.

Q. If the teeth were painless before the operation of filling was commenced, and painless during the excavation of the cavity why not fill them without going to the trouble of entering the pulp cavity and roots?

A. Experience has proved that though these teeth may remain comfortable and painless for a long time, decay insiduously goes on until the whole tooth is destroyed; so that if we wish to preserve what remains of such teeth we must use the most thorough means of doing this. Experience also teaches that to fill a tooth which is painless under excavation as has been described is not the most thorough way of preserving what remains of it. Filled in this way it *sometimes* remains comfortable, but *often* it does not. Besides, it is unscientific to fill a tooth in this way, as we cover up a diseased condition which may sooner or later result to the patient's disadvantage.

Q. Are there any means of telling when the pulp is nearly exposed besides the evidences of pain given when the dentine is cut?

A. It has been proposed to place a small ball of cotton in the cavity and to bring heavy pressure on the cotton, with a blunt plugger, from various directions and to watch the patient to see if he winces under the ordeal. Others have proposed to take a very fine, well-tempered probe and to scratch the cavity longitudinally, at right angles and to observe if the patient flinches when this is done. The wincing or flinching under either experiment pointing to the near approach if not the exposure of the pulp.

Q. What is one of the most common evidences or indications of pulp exposure or pulp disturbance?

A. Irritability to cold.

Q. What should be done if the pulp should be accidentally exposed during excavation, when it is deemed best *not* to devitalize?

A. As soon as the bleeding from the pulp has ceased the cavity should be bathed with the tincture of Calendula. This may be used full strength, but some dentists advise its use diluted with one-quarter of water to three-quarters of the tincture.

Q. Do you recommend the filling of a tooth when the pulp has been thus exposed?

A. Many dentists advocate it and report successes in the operation, which is called "capping the pulp," and quite as many, if not more, equally reliable men seem to have no faith in the operation, so that it is difficult to reconcile the question. On the one hand it is argued that as a man is more perfect with two lungs, two arms or two legs than a man deprived of these organs, so must a tooth be a better and more perfect tooth when it has a nerve to supply it with blood, not being dependent for this supply through its cementum, and therefore it would seem best to resort to the operation before destroying the pulp. On the other hand the opponents of the operation take the ground that as the pulp is such a delicate organ and so sensitive, it will not tolerate a capping or any foreign substance next it. That it will surely die under any capping however delicately or skilfully applied, and, with this experience argue whether it is just to the patient to run the risk of its death beneath the capping, with the chances of abscess supervening from the dead pulp, all the suffering connected with the formation and development of an abscess, as well as the changing of color in a tooth from the infiltration of septic matter in the dentinal tubuli. Thus, the question has as many adherents as opponents.

Q. Is there any recommendation as to the operation of capping?

A. It is recommended to cap the pulp *only* when the organ is in a perfectly healthy condition and when not the least inflammation of the organ is present. The successes reported point to persons of strong physique, hearty, robust and sanguine temperament.

Q. How is the operation performed?

A. The cavity is first bathed with creosote, the rubber dam having been applied. After this has cauterized the pulp at the point of exposure the surplus creosote is delicately absorbed away with small pieces of soft spunk or any other absorbent. A minute disc of thick tinfoil is made convex by forcing the rounded end of the handle of an excavator in it while it lays on a piece of soft wood, cork or erasing rubber. The concavity is filled with a paste made of creosote and powdered oxide of zinc, when it is delicately laid on the exposed pulp, permitting the larger circumference of the disc to rest on the sound dentine beyond the point of exposure. The remaining part of the cavity is filled with moderately soft oxy-phosphate of zinc filling material, and the rubber dam is not removed until this has hardened thoroughly. The remainder of the cavity may be filled *at the time* with amalgam or gold before removing the dam; or the dam may be removed and the cavity filled at a subsequent visit.

[TO BE CONTINUED.]

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IN the October *Items*, Dr. L. P. Haskell speaks of the explosion of pyrozone in opening. I have had several tubes explode, and finally became disgusted, and asked the druggist to open them for me. The first tube (twenty-five per cent.) he packed in ice and left for an hour; then placed the tube inside two test tubes of different sizes and tried to open with a file. The result was an explosion of all the tubes. After trying three different times he gave it up. As I cannot get along without pyrozone, I concluded to try once more. I held the tube under running water a few minutes, then wrapped in a towel and ground the end off on a smooth corundum wheel on the lathe, and to my surprise it did not explode. I have always used this method since, thereby saving several dollars and a great deal of "wear and tear" on my nervous system.—F. L. BROWNE.

## DR. JAMES E. GARRETSON.

We copy from the *International Dental Journal* for November, 1895, the obituary notice of this truly good man. All the attributes of charity, kindness and love ever found a place in his benignant heart. This tribute to his memory is the most fitting that could be recorded of him, unless it dwelt more on his many good deeds. We accord him all the honor, praise and glory which his many qualities and eminence so richly deserve.—[Ed.

DR. JAMES E. GARRETSON, Dean of the Philadelphia College of Dental Surgery, died of enteritis, at his home, Landsdowne, near Philadelphia, Sunday, October 27, 1895.

The death of this distinguished surgeon and writer comes with a shock to his many friends, and will bring a feeling of sorrow to a large circle in the medical and dental professions, in both of which he was equally prominent.

Dr. Garretson was born in Wilmington, Del., in October, 1828. He began the study of dentistry when quite young, and practised for a time in the neighborhood of Woodbury, N. J. He graduated in 1856 at the original Philadelphia College of Dental Surgery, the predecessor of the present Pennsylvania College of Dental Surgery. Shortly after graduation at this school he entered the University of Pennsylvania, and graduated as Doctor of Medicine after the usual course. He practised dentistry for some time subsequent to this, but his taste ran more to medicine and surgery, and he joined Dr. D. Hayes Agnew in his work at the Philadelphia School of Anatomy. It was this connection and his special studies that led him directly into a surgical practice which continued, with little interruption, for the remainder of his life.

It was through his efforts that a special branch of surgery was organized and became recognized as "oral surgery." He was subjected to some criticism at the time, as it was deemed by some to be an unnecessary division. This had its origin in a positive prejudice, at this period, against specialties in medicine. The question was frequently asked, "In what does oral surgery differ from general surgery?" Whether Dr. Garretson ever answered this query is not known to the writer, but he so impressed his individuality upon his work that oral surgery became a special branch of teaching, and has now been adopted as part of the curriculum of most of the leading dental colleges of the United States.

The history of his surgical work has yet to be written, but whoever prepares it will do injustice to Dr. Garretson if he fails to describe his kindness, tenderness, and ever-abiding sympathy with suffering, as well as the courage that enabled him to perform the most terrible operations with a skill not exceeded anywhere.

He was the first of the surgeons, we believe, to put into use the Bonwill dental engine in surgical operations, and through the aid of Dr. M. H. Cryer he has made this the most valuable of all surgical appliances.

It was the late Dr. Atkinson's often expressed conviction that "Dr. Garretson was the greatest oral surgeon of the world." Whether this were true or not, he had few if any superiors.

His work, "A System of Oral Surgery," is a monument of labor, and however much some may regard such a book as unnecessarily voluminous, it still remains the only one of its kind, and its issue marked a decided advance in dental training. While the constant demand for new editions of this work absorbed much of his time, he found sufficient leisure in his busy life to write other books under the *non de plume* of John Darby. These include "Odd Hours of a Physician," "Brushland," "Nineteenth Century Sense," and "Man and His World." These added to his reputation as a thinker and philosophical writer.

His lectures on philosophical subjects, delivered at the College, will be remembered by those who heard them in their entirety, as containing some of the deepest thoughts, conveyed in a most entertaining manner and with the least possible attempt at superiority.

His love of the philosophy of all ages was deep and profound. His studies in these directions tinged all his writings and addresses, and led many to turn away from them as peculiar; but they were only peculiar in that they were out of the common ruts of thought. To those who appreciated something more than mere platitudes they touched a responsive chord. The writer of this need only refer, by way of illustration, to his splendid tribute to the work of Horace Wells, at the Memorial Celebration in Philadelphia.

We have not space to extend this notice beyond present limits. It would be difficult to express in words the great loss the death of Dr. Garretson is to his friends, his students, the dental profession, and to the world at large. He lived that the world might be benefited by his presence in it. He led the way for others to follow, and left an example worthy of our most earnest emulation.

In response to a frequently expressed wish his body was cremated. He leaves a wife and two daughters.

## SELECTED ARTICLES.

### ANSWERS TO QUESTIONS CONCERNING ANÆSTHETICS AND OBTUNDENTS.

Since the adjournment of the Columbian Dental Congress, I have received so many letters of inquiry of which the following questions are, in substance, given, concerning cocain pigment, etc., that I find it practically impossible to give personal answers. I ask my esteemed correspondents to accept answer here given as if to them personally addressed, and, I may add, that what I have given below, I have proven. During the week in which I have written this article I have twice operated for "imprisoned third molars." Cocain pigment and chloroform, as advised, rendered one operation "perfectly without pain, but I knew all the while," the other attended with only slight pain, "But not much—no shock." Very few teeth should be extracted. Many roots should be saved and crowned. It is, however, necessary sometimes to remove teeth and roots, as it is sometimes needful to amputate limbs; both, when needed, should be done painlessly, by wise, skilled dentists and surgeons.

Q. 1. I understand you advocate painless dentistry. Is it possible and practicable?

A. Absolute painlessness in dental operations is scarcely attainable. Relative painlessness is possible, desirable, practicable, profitable to the operator, and appreciated by the patient.

Q. 2. If yes, 1st, What agent do you employ? 2d, What is the method you advise?

A. Avoid thrusting a searcher on an exposed pulp or sensitive dentine without an obtundent previously applied. Cocain and adjuvants for the superficial soft tissues, and chloroform to obtund dentinal fabrils, and those of deeper structures.

To prepare for a careful examination for pulp exposure and sensitive dentine, a wash, prepared as follows, is reliable:

### COMPOUND LISTERIN OBTUNDENT.

| | |
|---|---|
| ℞.—Sol. hyd. cocain (4 per cent.) | fl. oz. iij. |
| Glycerin | fl. ʒ ij. |
| Listerin ad | fl. oz. iv. M. |

Apply to gums and necks of teeth to remove all debris and mucus, with tooth-brush or with brush or sponge applicator; immediately wipe out deep cavities with absorbent cotton and moisten the cavities with "com. cocain pigment."

To prepare gingive and peridentium, to tolerate clamps, separators, gilling twine, scalers and pyorrheal blades, cleanse the neck of teeth and the gums with the compound listerin obtundent, or with pyrozone, 3 per cent. or less, then dry and apply cocain pigment, working it well along the necks of teeth into pockets and into gum borders; to operate (surgically) in and about the oral cavity, and to extract teeth and roots painlessly, the patient remaining conscious and retaining voluntary motion, cleanse the parts as directed, dry them, and apply the pigment (for extracting), and while waiting for it to anæsthetize the parts, administer chloroform.

To drill, bur or grind sensitive dentine, open pulp chambers, amputate or extract live pulps painlessly, proceed precisely as directed above for extracting and operating surgically.

Painless extraction of teeth and oral surgery by local anæsthesia is possible and practicable by hypodermic injection of cocain. The following formula gives a hypodermic mixture, safe and effective, from the use of which, so far, no injurious or untoward results have supervened. Painless amputation of the finger, painless excision of a portion of a rib, and numerous other operations of minor surgery, unattended by pain, attest its value:

### COMPOUND STROPHANTHIN HYPODERMICA.

| | |
|---|---|
| ℞.—Sulf. atropin | gr. 1-2. |
| Strophanthin | gr. 1-5. |
| Acid Carbolic (95 per cent.) | gr. v. |
| Hydrochor. cocain | grs. xx. |
| Aq. dist | q. s. fl. oz. i. |

M. Sig.--Four to six drops, hypodermically, for local anæsthesia.

Q. Is there any soreness or sloughing after the use of the cocain pigment?

A. None.

Q. Is any special brand of cocain preferred?

A. If by "brand" is meant manufacture, I know of none especially to be preferred. No "brand" should be trusted unless the drug is in clean prisms, of the smaller rhombic system—crystals free from powder or dust.

Q. Is there nausea in the use of the pigment?

A. None.

Q. Is there any danger in using the pigment on extremely nervous persons, or those suffering from heart trouble?

A. Not the least. Care should be taken that none of the pigment reaches the stomach.

Q. Do you obtund sensitive dentine with the pigment by applying it in contact?

A. With but varied results and partial success. If the dentine is cleansed and dessicated, the pigment applied and evaporated by a blast of hot air, good results follow, especially if the soft tissues surrounding the tooth have been treated with the pigment.

Q. Is the pigment as effective as the 4 per cent. of cocain injected?

A. I think not; but there is great danger in hypodermic injection of any per cent. solution of cocain unguarded by some escharotic or coagulant. An injection will reach nerve fibrilla more quickly than any topical application.

Q. Is there any care required to prevent the deterioration of the pigment?

A. The last drop is as good as the first.

Q. Does the pigment act on abscessed teeth?

A. By its skillful use abscessed teeth and roots can be painlessly removed. Of course congestive tissues absorb less rapidly than those in a normal condition, hence in these cases the great value of chloroform with the pigment as an obtundent.

Q. Is there no danger from shock in operations during partial anæsthesia; by the chloroform and the pigment as you advise?

A. Not the slightest from shock caused by extraction, burring or cutting, consequent on the partial anæsthesia; but there is danger from shock in giving chloroform, ether or nitrous oxid, if avalanched on the peripheral nerves; and there is danger of shock in operations without anæsthesia, partial or general.

It perhaps is as well here as elsewhere to enlarge on this answer. I am aware that this answer is in flat contradiction to the teaching of scientists of Europe and America, and opposed to the consensus of opinion of experts(?)on this subject; nevertheless I modestly but unwaveringly maintain its correctness.

I assert that the first effect perceivable of an anæsthetic given as I advise, so gradually as not to irritate the nerves of the nose, throat and lungs, is on the ultimate fibrils of the sensory nerves. Any educated person can verify this by a trial on himself. Long before the brain becomes clouded, distinct sensations can be noticed in the extremities, especially at finger-tips and toe-ends, and long before consciousness and volition are held in abeyance by any true anæsthetic, capacity to suffer pain is abridged. If this be demonstrably true, and I re-assert it, then what logic can support the proposition that partial anæsthesia (insensibility) augments the consequence of pain shock? Every tyro in anæsthetics knows that inhalations of chloroform, ether, or nitrous oxid will suspend for the time the "aching" of the felon, carbuncle, or phleghmon, and mitigate the fiercer anguish of local neuralgias, and angina pectoris even. What senseless sophistry then to argue that an obtunding of the fibrils through which the knife passes increases their ability to alarm the brain and depress ganglionic force. To my mind the fact is, when deaths occur, as they have too often in the earlier stage of operations, shock from the anesthetic does what the sand-bag in the hand of a footpad accomplishes, and often more speedily. The shock is from the chloroform, and not the lancet, bistoury, or catling. It is with some pride and a great degree of satisfaction that in the earlier use of chloroform and, later, cocain and chloroform, for more than twenty-five years, not a single accident has marred my faith in the safety and advisability of anæsthetics in dental as well as surgical practice; but I wish to emphasize the caution here given, that shock must be avoided in giving the anæsthetic. If my way is not followed, then some other way should be chosen equally gradual, and that will admit a large amount of air with the vaporized drug. I will not be responsible if my directions and caution are not heeded.

Q. Is the pigment safe as a hypodermic?

A. Of its efficiency and safety, I have not a doubt, but I advise in preference the compound strophanthin hypodermica. As a hypodermic, it is more readily absorbed by the surrounding tissues, has been proven safe and forceful, and is less expensive.

Q. What care should be used, and what dangers attend hypodermic injections of cocain?

A. 1st. Never thrust the needle into or through a blood vessel of any size. Thrombosis or ebolism would be the least of the sequela likely to supervene.

2d. Never pierce the trunk of a nerve of any size sufficient to be transfixed or severed by the needle. Gloso-pharyngeal, lingual, or facial paralysis is liable to follow, all of which have come under my notice, subsequent on operations by careless dentists.

3d. Under no circumstances throw a solution of cocain of any strength among cellular tissues, unless combined with coagulants, or escharotics of sufficient strength to circumscribe and localize the injection, and bar it from the systemic circulation.

Q. Is there not danger of the patient and operator becoming victims of using chloroform and cocain as a "habit?"

A. To the patient not the slightest; cocain uncombined is bitter to the taste and not fascinating; combined as advised by me, its pungency and viscidity render it anything but agreeable to taste or in effect.

To the dentist of to-day, with glowing records of experiments before his eyes, its toxic dangers stake-lighted, bell-buoyed and fog-horned, if there is danger to him, then dementia and parrallaxis cannot come too soon; such a "professional" were better in an asylum than free—better dead than living. I have more sympathy for suffering clients than for such idiotic practitioners.—A. C. HEWETT, M.D., Chicago, Ill., in *Review*.

## METHODS OF DESTROYING DENTAL PULPS.*

The many articles written and the frequent discussions of this subject are evidences of universal interest. With but few exceptions, all are on the use of arsenic for this purpose, as since its introduction nearly sixty years ago by Dr. Spooner, hardly anything has been found to take its place. The many theories advanced as to the best method of applying it, and the almost universal expression of unsatisfactory results, show the necessity of something better for this purpose. The application of arsenic in a tooth causes pain more or less severe, continuing from one to several hours. How to obviate this pain is an important question. One advances a theory why arsenic should cause pain and gives directions for making the application, affirming that no pain will result. Another follows these directions, but with an entirely different experience. Then to harmonize the different experiences, we hear this phrase often repeated : "Arsenic works differently in different localities." My experience, like that of many others, has been so unsatisfactory, that I question the statement that arsenic always works satisfactorily and painlessly; and so I have attempted many experiments. In my experience if arsenic was placed in a tooth when there was no exposure of the pulp, pain always resulted; when applied to an exposed pulp, I have sometimes succeeded in devitalizing it without causing pain. With many, this is a light, steady, annoying pain, lasting for several hours and exceedingly exasperating; and with others a severe, throbbing pain, almost unbearable, but not continuing more than an hour or two. One writer has said : "the pain resulting from the application of arsenic is evidence that the arsenic is doing its work, and when the pain has been severe we are sure to find the pulp devitalized in a few hours; that if there is no pain, it will take days or weeks for the pulp to die." So he announces as a rule to follow, that the length of time arsenic should be left in a tooth must be governed by the amount and severity of the pain. Another serious objection against its use is that it frequently excites more or less inflammation of the pericementum. The recent experiments of Dr. Kirk with coagulants in pulp-canals demonstrate very clearly that whatever care we may take in sealing medicines in the cavity of a tooth, we cannot prevent their exerting more or less influence on the pericementum. From my experience in the use of arsenic I have deduced a few rules. First, to always make the application in the morning, to allow the patient an opportunity to have it removed in the afternoon if the pain is severe, instead of compelling him to endure the pain during the night. Second, to always make the application to an exposed pulp. I use a piece of blotting paper, which is saturated with creosote. On this is placed the least possible amount of arsenic, then a little powdered cocain, and this I cover with cotton and sandarac varnish or wax, using care not to have any pressure on the pulp. This I leave in the tooth from two to three days. Frequently cases present with severe pulpitis, but no exposure. In such cases as these, many advocate saving the pulp, relieving the pain by reducing the inflammation, and then filling the cavity. My experience has been that wherever there has been odontalgia arising from any disturbance of the pulp, every attempt to save the pulp has been a failure. In these cases to apply the arsenic without first exposing the pulp subjects the patient to an ordeal to which I would not submit myself. My personal experience of suffering from applications has stimulated my search for something better. To expose the pulp in these cases used to be a painful operation, but practiced because I believed the temporary pain obviated a long period of suffering.

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* Read before the New Jersey State Dental Society, July 18, 1894.

The process known as "knocking out" answers very well in certain cases, and these are in the anterior teeth having single pulp canals and the tooth well cut away, allowing free access to the pulp. A sharp stick is shaped to go the length of the canal, and with a mallet, by one blow, is driven into the pulp. This method is sometimes a failure as a result of miscalculation of the canal, thus necessitating a second application of the stick, to which the patient is apt to interpose serious objections.

Carbolic acid is sometimes used, applying the crystals to the exposed pulp, cauterizing the surface, then removing the cauterized parts, and following with another application of the acid, continuing this way removing the pulp in parts ; a very slow, tedious operation for both patient and operator, and attended with more or less pain. A method hardly to be advised, as it offers no advantages over the "knocking out" process.

Cocain is advocated by a few for the purpose of removing pulps, and as right methods for its use become better known, the efforts will be more successful. Cocain as a local anesthetic was first brought to notice in this country by the publication in the *Medical Record* of October 11, 1884, of a letter from Dr. Noyes, of New York, then studying in Germany. On November 13th, following, I read a paper on "Hydrochlorate of Cocain," before the Connecticut Valley Dental Society, one sentence of which I quote: "What has already been accomplished with cocain leads us to believe that by its use we can banish arsenic from our practice, for if placed on an exposed pulp it should so benumb it as to allow its removal to be a painless operation." Ten years have almost passed, and we are just beginning to realize that cocain can be successfully used in place of arsenic for devitalizing pulps. The first few months after the publication of the above-mentioned letter, many experiments were made with this drug on the pulp. Because of its complete success as a local anæsthetic when applied to the eye we thought it would have an equal effect on the pulp, but our experiments were not a success in the line we had hoped. While we found it did exert an influence, it was not sufficient to allow of the removal of the pulp or of the insertion of an instrument into it. Since then only a few have continued their experiments, and only within the past year has a successful method been brought before the profession. Occasionally items have appeared in dental journals like the following: "To remove the pulp, apply crystals of cocain and allow to stand ten minutes, when the pulp can be easily removed." Any one who has had much experience with cocain will give such items very little credence. When one reports a painless operation on the pulp, he wants to bear in mind that there are always too sides to a report. When an instrument is applied to a pulp it makes a great deal of difference which end of the instrument you hear the report from.

A little over three years ago I commenced a series of experiments with coacain, using the hypodermic syringe and injecting the solution (a four per cent. I find sufficient) into the pulp. Emboldened by success with the first case attempted, I have continued my experiments, and now I do not hesitate to attempt its use in every case. During the past year I have only resorted to arsenic in four cases, the reasons for which I will give later. My method in detail is as follows: If possible I apply the dam, as it is necessary to keep the cavity dry until the pulp has been injected. After drying out the cavity I uncover the pulp, and this is done in an almost painless manner by first blowing on warm air, then an application of a saturated solution of cocain in alcohol and ether or chloroform equal parts, allowing this to remain about thirty seconds, then another application of warm air, continuing in this way till sensitiveness is wholly obtunded. As soon as the pulp is exposed,—and I only desire to expose a spot as large as the point of my hypodermic needle—I apply crystals of cocain and moisten with campho-phenique. After standing thirty seconds I apply warm air for a few seconds, and then attempt to work the crystals into the pulp. In from two to ten minutes I am able to introduce the needle of the syringe without pain. With a quick push I force the piston down and at the same time force the needle into the pulp, and it is instantly benumbed.

I immediately with burs proceed to open up the pulp-chamber and remove the body of the pulp. As I reach the canals, I occasionally find a little sensitiveness, when I have to inject each canal. I then remove the dam, and proceed, with one exception, as I always do in treating a pulpless tooth. First, I have the patient rinse the mouth with a solution of hydronapthol; dry out the cavity and flood it with hydrogen peroxid, and with a Gates Glidden drill ream out the canals, at the same time the drills remove the pulp tissue, and working the drill in such a manner that the peroxid is always in advance of the instrument. When the canals are thoroughly cleansed I wipe them out, and this is the exception noted above—I pump into each canal a saturated solution of zinc chlorid or carbolic acid, preferring the former. I do this to destroy and render harmless the minute remnant of pulp which it is impossible to remove from the constricted portion at the end of each root. If this precaution is not taken there will be more or less pain after the root is filled. As soon as the influence of the cocain has passed, sensitiveness returns to the remnant end, and if the canal is filled as thoroughly as it should be, there will be pressure at the end of the canal, causing this pain, which will not subside till the filling is removed. I allow the zinc solution to remain in the canals while I am preparing the gutta-percha points; then I again wipe out the canals and pump a saturated solution of iodoform in eucalyptol, and immediately press in the gutta-percha points to the end of each canal, and proceed to fill the cavity.

When patients come in complaining of toothache, and the pulp is still alive, if I am able to give ten to fifteen minutes, I proceed at once to remove the pulp and fill the canals. If there is tenderness on pressure of the tooth, showing that inflammation has extended to the pericementum, I give the patient, as I dismiss him, a few capsicum plasters to apply to the gum over the tooth. When I cannot give any time to the patient, I wash out the cavity with warm water, moisten a pellet of cotton in creosote and oil of cloves,—equal parts, —sprinkle on a few crystals of cocain and seal in the cavity. This generally gives instant relief, and I endeavor to attend to the case within the next two days.

The question will be asked: Is this method of removing pulps a painless one? I answer, Yes and No. In the majority of cases it is painless, but with some there is a little pain. In the four cases referred to above I was not able, after trying for fifteen minutes, to enter the pulp—three of these teeth were inferior third molars—so I resorted to arsenic.

The pulp of a tooth is composed of blood-vessels and nerves. It has a special sensory function, and while it does not have the tactile sense, it has the sensory function highly developed—as much, if not more so, than any other organ in the body. While to a touch it responds quickly with a shock of pain, it is seldom that a person can correctly locate the tooth from which the pain proceeds, thus showing the decided difference between the tactile sense and the sense of pain. Words fail to describe the intense suffering produced when an exposed pulp is only slightly touched, therefore in all operations on the pulp the operator should certainly bear this in mind. To remove pulps in the manner just described requires judgment and patience ; needless suffering will ensue in any attempt to hurry. Within the past two years I have removed nearly one hundred and fifty pulps by this method, and only in one case did I have to remove the filling in the canal, in which instance it was in the left superior cuspid of the writer, and this because I neglected to apply the zinc chlorid after reaming out the canal. Naturally, my personal experience of the entire absence of pain while injecting and removing the pulp from this tooth carries more weight, in my own mind, as to the painlessness of the operation, than the testimony of all the other patients operated on.—GEO. A. MAXFIELD, D. D. S., Holyoke, Mass., in *Atlanta Dental Journal.*

## THE BREATH. *

Impure breath is liable to occur at any and all periods of life. It is found in a great variety of phases—from the slightest perceptible deviation from the normal state to that in which it is loaded with a large amount and great variety of excrementitious matter from various sources, perceived sometimes even by the sense of taste, at least so far as the patient is concerned, but more especially by the olfactories, making such an impression through this channel as to produce nausea, and, indeed, the infection of contagious diseases may be carried from one person to another by the breath. A vitiated breath as a means of conveying the seeds of diseases is not duly appreciated by the public, and perhaps not so fully as it ought to be by the majority of physicians.

We involuntarily turn away from the fetid breath of even our best friends. One may be beautiful in face and form, attractive in manner and fascinating in conversation, and possess personal magnetism that may be well-nigh irresistible, and yet an offensive breath will neutralize or destroy the influence or power of all these qualities.

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*Abstract of Paper read at Ohio State Dental Society, December, 1892.

In no other relation is this subject of greater moment than that existing between the dentist and his patient.

The degree of offensiveness is modified by the acuteness of the olfactories of one or both parties, together with the conditions of the exhalations, and the course or sources of the fetid breath.

If the dentist is subjected for a considerable time to this condition of things his general health may become affected in a more or less marked degree, according to his own susceptibility, and to the degree of vitiation of the air he is compelled to inhale. There can hardly be a doubt but what many suffer very greatly from this cause; and though one may not suffer much, or apparently at all in this respect, yet a sense of discomfort and uneasiness is always experienced by the dentist in his professional work when subjected to a vitiated atmosphere, and this will necessarily interfere somewhat with the thoroughness of his operations. It is a serious question whether the dentist ought ever to subject himself to such embarrassments, at least for more than a few minutes at a time. It certainly would be for the welfare and interest of both the patient and the dentist, were the former to be put upon proper treatment before having extended operations made upon the teeth.

The offensive breath of the operator is a matter of special interest to the patient as well as to himself. The dentist has no right to make himself, or even to be a nuisance in any respect to those whom he serves, and if he has any just appreciation of the fitness of things, he will see to it that his presence in every respect is rendered as little objectionable as possible.

The patient is not likely to suffer ill-health or prolonged discomfort from the fetid breath of the dentist and, indeed, many of less acute sensibility, will be inclined by and by, to seek more acceptable service.

The dentist should be able at all times to discriminate in regard to the character of his own breath; it may sometimes be a necessity to submit to this annoyance from others, but he should see to it that he never imposes upon his patients in this way. I have known superior operators—persons of gentlemanly deportment in every other respect, whose breath was in such a condition as to disgust all those who came within its influence; indeed, I have known some such who were compelled to abandon the practice of dentistry.

There are some instances in which this affection seems uncontrollable, but in the great majority of cases it is amenable to proper treatment, and can either be modified, masked, or wholly eradicated. It can in many instances be wholly, and by proper care, permanently relieved. In others the change is only of a temporary character, irrespective of any treatment that may be employed.

Derangement of the stomach, alimentary tract, kidneys, liver or skin is almost certain to result in more or less marked change of the breath, from the fact that in part, at least, the waste that thus fails to be removed is thrown into the lungs, and will, in many instances, produce a markedly offensive breath. But in some instances the breath may be contaminated with excrementitious matter that possesses little or no offensive odor. The defective function of the digestive apparatus is, in nearly all cases, a source of fetid breath. Disease of the lungs of almost every variety is attended with more or less vitiation of the breath.

Of the local sources of this difficulty there are many, and of these there may be said to be two classes, the one embracing all the local disorders that many contaminate the breath after it leaves the lungs; this will embrace the various forms of diseases found in the throat, mouth and nose. Diphtheria, scarlet fever, tonsilitis, and perhaps some other affections, though affecting the entire system, possess a local manifestation that results in greatly vitiated breath.

The various catarrhal affections that are found in the nose, the throat and mouth, in all cases more or less affect the breath, ranging all the way from the very mild, almost imperceptible, change to an intolerably disgusting degree. This affection should be well studied by the dentist, in order that he may be able to give his patient some, if not permanent relief, and that he may protect himself so far as he may against an intensely annoying and offensive condition.

Diseases of the gum and mucous membrane of the jaws are often the occasion of this offensive condition. This will result, sometimes, from a vitiated exudate from the mucous membrane, or it may occur, us is frequently the case, from a discharge from the margins of the gums, and from the sockets of the teeth.

Necrosis and sloughing of the bony tissues of the sockets nearly always produce a very offensive condition.

The discharge from alveolar abscess is oftentimes so vitiated as to load the breath which passes out of the mouth with an exceedingly offensive odor.

Decayed teeth are charged, especially by various medical writers, as a very frequent cause of offensive breath. This is true not only of physicians, but to a greater extent, perhaps, of the laity. There is not, however, as much in this as is usually attributed to it. Occasionally cases are presented in which an exceedingly foul breath is wholly attributed to one small innocent cavity of decay in the grinding surface of a molar tooth. Were all other causes of offensive breath eliminated, than that which comes directly from the decay of the teeth, there would be, in the aggregate, an immense improvement.

Another fruitful source of offensive odors of the oral cavity is found in the presence of foreign substances or matter in the mouth in the shape of soft salivary calculus, accumulation of food, and a glutinated mucous deposited upon the teeth or the artificial dentures undergoing decomposition, and necessarily throwing off an effluvia that will be mixed with the breath. The saliva and mucous, mixed thus with foreign substance, and retained for an undue time in the mouth, will undergo such change as to present a very offensive condition. Now as to these extraneous causes of the affection under consideration, it is not difficult for the educated patient to determine what should be done; simply purification of the oral cavity in the most thorough manner by the entire removal of all offensive material, and after this the intelligent use of disinfectants upon the teeth, mucous membrane and dental plates, if they are in the mouth.

With a large variety of disinfectants, antiseptics, cleansing materials and methods there is no difficulty in rendering almost every such case free from the objectionable condition, for a time at least sufficient for operations.

A great many formulas have been given for the correction of offensive breath; the suggestions made for the use of these, however, in the majority of cases, are upon a false basis; with many of them it is only the substitution of one odor for another, or the mixing of two offensive conditions, and producing a third that is, perhaps, temporarily more tolerable than either of the others.

In treatment here, however, the aim should be, as in all other medical treatment, to attain the most permanent results; that, doubtless, is the true theory of all medical and surgical practice.

Temporizing should never be employed when something better can be attained.

It is very desirable that the profession should give more attention to this subject than hitherto. In our literature very little will be found upon this subject, and in all medical literature so far as I have been able to examine, only a fugitive reference to it has been here and there made; and I may here refer those who have not investigated the subject to a little work entitled, " The Breath and the Disorders which give it a Fetid Odor," by Dr. Joseph W. Howe, the third edition of which was issued in 1885, and a paper published in the *Dental Register*, by Dr. D. C. Hawxhurst, Vol. 27, page 104.—J. Taft, M.D., D.D.S., in *Ohio Dental Journal.*

## COCAIN.

In my early experience with cocain as a dental anæsthetic, I, like every one else, encountered difficulties, or embarrassing situations to say the least, which tempted me to forego the use of this valuable drug as a safe and practical local anæsthetic. Yet its satisfactory obtundent qualities left no choice but to make use of it, though such use seemed to be attended with a considerable measure of hazard. Like many others, who have tasted of its beneficial action, I began experimenting with the drug to make combinations which would render its use more practicable and safe. I began with a 6 per cent. solution for hypodermic use, on the base that one grain could be safely used as a dose. I was not long in discovering that either the dose or concentration was entirely too high, and I now know both were. I experimented with various solutions, and finally came to the conclusion that for hypodermic injections a 2 per cent. solution in water was sufficiently saturated for any purpose, even for use in anæsthetizing pulps, and generally where it can be used, a 1 per cent. solution would accomplish definite and satisfactory results. I have even secured very satisfactory anæsthesia, for extracting a tooth, with a solution of the strength of $\frac{1}{6}$ of 1 per cent. The doses of cocain I have gradually reduced from 1 grain hypodermically to from $\frac{1}{16}$ to $\frac{1}{2}$ gr.

The great objection to cocain lies in its tendency to induce hysteria, when given in small doses, caused by its stimulant effect on the nervous system; also its depressing action on the respiration and heart when used in excessive doses. The tendency to hysteria and respiratory difficulties are the most important complications to consider, because they occur when least expected and sometimes with small doses, while the depressing heart effects only occur in peculiarly weak conditions of this organ, or as secondary to the respiratory difficulties, or because of excessive dosage.

My first experiments to control this nervous excitement were with the standard narcotics, morphin and chloral. I soon found that many persons were highly susceptible to the use of morphin, and that chloral was objectionable because of its bulk and its excessive irritating character when injected into the soft tissues, causing sloughing of the tissues. The experiments of Dr. Pruyn convinced me that morphin was the most accessible drug to control this exciting effect, and on looking it up I found that atropin was morphin's great antagonist, especially against its poisonous and nauseating effects. I therefore began using a combination of cocain, morphin and atropin, and soon found that I had a satisfactorily corrected formula, and that the drugs seemed to harmonize therapeutically in producing a more powerful local anæsthesia, and that systemic disturbances were very rare with proper doses. This combination I am now using as a local obtundent with good results. I use sterilized water to make the solution, and to prevent possible decomposition make the solution fresh daily or as needed for use. The formula I use is as follows:

R. Cocain, .......................................... $\frac{1}{2}$ gr.
Sulphate of morphin, ........................... $\frac{1}{8}$ gr.
Sulphate of atropin, ........................... $\frac{1}{200}$ gr.
Sterilized water, ............................xxx. gtts.
Mix and inject hypoder. gtts., v to xv.

For convenience I have had the cocain, morphin and atropin made into soluble tablets by Parke, Davis & Co, of Detroit, and in this way solutions of any strength desired may be quickly and accurately made with little or no inconvenience. The sterilized water I use is distilled water, containing from 8 to 10 per cent. of listerin or euthymol to keep it sterile. If you desire to make a 2 per cent. solution, all that is necessary is to dissolve one of the tablets in 25 minims of water. A 1 per cent. solution can be made by dissolving one tablet in twice this quantity of water, or 50 minims. A 4 per cent. solution can be made either by reducing the water one-half or adding another tablet to the 25 minims, etc., etc.

The advantage of this method of making solutions is that you can always have pure, clean solutions, and the preparations are portable in small compass. The drugs used in the tablets are the purest that can be had, and the firm assure me they are especially careful in filling all such orders. Another advantage is that other correctives or adjuvants may be added to this formula when the solutions are made.

In my opinion the manner of using cocain in dental practice has much to do with the disrepute into which this most valuable drug has fallen. It is an excessively poisonous substance and must be used with the greatest caution and care. There is a tolerably well marked outline beyond which clinical experience has demonstrated we cannot go without hazard. Not more than one-half grain, nor in stronger than 2 per cent. solution, should ever be used at one sitting as a hypodermic injection. It should be used with a clean syringe in perfect order, and injected only a little faster than the tissue will absorb it. Excessive pressure on the syringe will cause irritant results and introduce more of the drug than is necessary to produce the desired effects. All excess or overflow should be prevented or absorbed before it comes into contact with the tongue, as it will be quickly absorbed by the tongue, or if swallowed produce paralysis of the pharyngeal and laryngeal muscles, and induce dyspnea and develop hysterical symptoms. The best systemic fortifier is coffee or food.—Dr. N. S. Hoff, Ann Harbor, Mich., in *Ohio Journal.*

## THE PRACTICAL PLACE.

### Cocain Anæsthesia Rendered Harmless by the Addition of Trinitrin.

The author proposes the following formula, in which trinitrin is introduced, with the effect of preventing the anemia of the brain :

R.—Cocain muriat ........................centigrms. xx.
Alcohol sol. of trinitrin, 1 per ct.gtt. x.
Distilled water........................grms. x.

Each cubic centimeter contains two centigrams of cocain and one drop of the trinitrin solution. Gauthier has used this formula for two years with great satisfaction.—*Revue gen. de Clin. et de Ther.*

### Relief of Pain from Suddenly Exposed Pulp.

Dry the surface of the pulp, and paint with collodion.—A. W. Harlan.

To prevent plaster of Paris from sticking to the palatine surface of a vulcanite plate, paint or brush the model in the flask well with soap suds.—*Zahntechniche Reform.*

### To Remove Remnants of Putrescent Tissue in Root canals.

Force trichloracetic acid into the canals. It destroys all tissues and purifies in a few moments' time —C. N. Peirce.

Cocain dissolved in chloroform, one grain to one-eighth ounce of chloroform, is good to extirpate pulps without pain.

### Extracting Teeth by Electricity.

Trials have been made at London with a new apparatus for the extraction of teeth by electricity. It consists of an induction cell of extremely fine wire, having an interrupter that can vibrate at the rate of 450 times a second. The patient sits in the traditional armchair, and takes the negative electrode in his left hand and the positive in the right. At this moment the operator turns on a current whose intensity is gradually increased till it has attained the utmost limit the patient can support. The extractor is then put in circuit and fastened on the tooth, which, under the action of the vibration is loosened at once. The operation is performed very quickly, and the patient feels no other sensation than the pricking produced in the hands and forearms by the current.—*Dental Digest.*

DR. MITCHELL says: "A heated instrument applied to the tooth will generally settle the question, whether the nerve be dead or alive."

### D. GENESE ON AN EFFECTIVE OBTUNDENT.

At the First District Dental Society of New York Dr. Genese treated and excavated a lower first molar, capping and filling at the same time. The cavity was large and the tooth hypersentive. Dr. Genese demonstrated the obtundent effect in this case of his preparation of carbolate of cocain, the formula of which is:

℞—Cocain, 4 per cent.;
Carb. acid, 50 per cent.;
Benzoin, gum, 50 per cent.;

by the aid of which he excavated the tooth painlessly.—*Extract Cosmos.*

### AN EASY AND SAFE METHOD OF REMOVING PULP AFTER DEVITALIZATION.

Take a watchmaker's pivot broach, known as the Swiss broach, anneal it, wind a few shreds of cotton around the end, push it into the pulp cavity and slowly twist it. As the cotton is wound around the broach, the pulp will cling to the cotton, and thus will be taken out whole, without the danger of breakage usually accompanying the use of barbed broaches. It is not necessary to carry the instrument to the end of the root, but some cotton should be forced ahead of the broach before twisting it.—*Dental Digest.*

### ADVERTISING DENTISTS.

The young graduate who is just entering on the activities of his professional life, and who would be so ungrateful as to repudiate the examples and teaching given by his Alma Mater, would be considered unworthy of the school that created him, yet our dental colleges resort to methods of obtaining clinics which would give cause for expulsion of a member of a dental society. I observed while at school that to obtain patients for its clinics my professors advertised in the dailies of the city and weeklies of surrounding towns, that "The Dental Clinic will be open in the afternoon of each day, and open all day Saturday. Prices of work to cover cost of material." The response was flattering to the advertisers. Students are not only silently taught to advertise, but they are taught to use dishonesty in it also, for the schools charge for their clinic work from five to ten times the value of the materials. A dental college is a great professional institution. We must expect its examples as well as its precepts. That which is professional and ethical in a great institution of learning, ought to be entirely admissible in those who are turned with honors from its doors.—G. G. BROCK.

### A SEPARATING MEDIUM THAT IMPARTS A SMOOTH, GLOSSY SURFACE TO YOUR PLASTER.

Coat impression with very thin shellac varnish, just enough to color the plaster. Then coat with a varnish made by dissolving gum sandarach 3 parts, gum elemi 1 part, in pure alcohol. It must be thin enough not to form bubbles when applied with soft brush.

### TWO USEFUL IDEAS IN PROSTHETIC DENTISTRY.

The first is a combination of gold and vulcanite for bridges. Make and place in position gold shells for the teeth that serve as abutments; bring them away in an impression, from which make a model in sand and plaster. Connect the shells with a long bar of platinum and iridium to give horizontal strength and afford attachment for the rubber. Place moulding composition about the bar and adapt it to the gum while soft, directing the patient to close the teeth upon it for a bite. Adjust suitable vulcanite teeth and finish by usual process. It is often not necessary to take a bite, but simply wax the teeth to the bar and arrange in the teeth for articulation. The rubber can also be cut away so as not to rest on the gums, so that it will not be necessary to get an impression or make a model of the gum. There are no crevices for the collection of fluids and food; it offers greater resistance to the strain of mastication than soldered teeth. There are many modifications of this idea possible; two bars can be soldered in and swaged gold grinding faces vulcanized in; fill in with solder, catching some platina pins in solder for attachments; wax on and bite into adjustment. If the teeth for abutment have long crowns and small necks extend the gold shell only to knuckle and thus avoid cutting away the enamel to get straight lines, removing the grinding surface to admit the thickness of gold in articulation. Extend the end of the bar past the shells for posterior teeth. In a case of inserting the two superior laterals, collars were cemented to the canines connected by a bar across the lingual surface of the centrals, with the laterals backed and soldered to the bar. A bar thus attached can be utilized in cases of regulating.—*The Ohio Dental Journal.*

### CHLOROFORM—HOW TO GIVE IT.

Chloroform may be given as safely as ether, if the following rules are adhered to:

1. The stomach should contain no food, and a very small quantity of liquid.
2. Place the head a little lower than the trunk.
3. Have no tight clothing about the patient.
4. The anæsthetic should be chloroform (Squibb's), 70 per cent. alcohol, 30 per cent. by volume.
5. A hypodermic of morphine sulph. gr. $\frac{1}{4}$, and atropia sulph. gr. $\frac{1}{150}$, should be given a half hour before administering the chloroform.
6. The first inhalation of the vapor should be well diluted with air, and very gradually given.
7. A teaspoonful of aromatic spirits of ammonia should be given in a half ounce of whiskey or brandy by the stomach.
8. A starched towel folded in the shape of a cone, the apex open, should be used in administering the chloroform; this allows the air to enter freely.
9. The pulse and reflex of the eye should be closely watched, and the towel cone removed from time to time when indicated.

The physiological and therapeutic effects of the drug readily suggest the reason for these precautions, hence I shall not enter into a discussion upon the subject. I have never had a death from chloroform in an experience of five years.—D. J. SPOTSWOOD, in *International Journal of Surgery.*

### CLEANING THE TEETH.

A two per cent. aqueous solution trichloracetic acid to moisten the pumice is perfectly harmless. I have used it in my practice for some time and find it far superior to tincture iodin for removing the "green stain" on children's teeth.—W. H. JONES, D.D.S., Fultonville, N. Y.

## Musk Dentifrice.

| | |
|---|---|
| R.—Camphorated chalk | 2 oz. |
| White castile soap | 3 drms. |
| Powdered orris root | 6 “ |
| Bicarbonate of soda | 3 “ |
| Grain musk | 2 grs. |

—*British Journal of Dental Science.*

## Some Laboratory Hints.

Dr. G. B. Snow, Buffalo, states in an article in the *Dental Cosmos,* that “ Sulphate of potash is often added to the plaster to make it set more quickly; but I do not approve of the practice, as I do not believe the plaster is as hard with this addition as without. It may be also observed that there is little or nothing gained by using very little water in the plaster. Enough may be used so that the mixture will flow readily, and when set the mass will be as hard as though less water were used.

“ I believe in allowing plenty of time for the plaster to become thoroughly hardened before vulcanizing, and I believe that the darkening of the joints, when section teeth are used, is in some instances, partially at least, owing to the undue hurry of the dentist to get the case into the vulcanizer.

“ Before packing, the face of the model is either covered with tin foil, or treated with collodion or liquid silex. The former is cemented to the model with thick shellac varnish, and if afterwards rubbed with soap, it is quite readily peeled from the rubber. Tin foil, such as is used for filling teeth, is used for this purpose, and if it should stick to the rubber it can be dissolved by immersing the unfinished plate in a bath of hydrochloric acid for a short time. The action is hastened by the addition of a small quantity of nitric acid.

“ Collodion is sold at the dental depots under the name of ethereal varnish, and at an extravagant price. Any photographer can furnish plain collodion, which will answer the purpose equally well, and for less money. This is painted on to the surface of the plaster before packing the mold.

“ Liquid silex, or soluble glass, is quite largely used for coating the mold, and serves an excellent purpose, but it requires some precautions in its use to attain the best results. First, the surface of the plaster must be clean, so that it will freely absorb the silex when applied. If it has been oiled, or if wax has been melted into it, the silex will not be absorbed, and though it may be of some benefit, will not be fully successful. Secondly, the silex must be quite thin, and should be diluted by the free addition of boiling water. It is well to have a second vial into which a small quantity can be poured and diluted for use. It must be kept free from fragments of plaster or other dirt, as it is easily decomposed. Thirdly, it should not be applied until a very short time before the mold is to be packed and vulcanized. After a few hours the silex is decomposed by the action of the plaster upon it, and a part, at least, of its good effects will be lost."

In making full sets of teeth I nearly always leave off the first bicuspids, so as to throw the molars further forward. Better use large jaw teeth and fewer of them. If the first bicuspid is needed to fill the arch, put it behind the second molar. Especially in lower sets I want large molars, so that in chewing there can be more latitude for grinding instead of mashing of food. And why in the dickens can't our teeth manufacturers be impressed that cuspids should be made more prominent so as to look more natural?—J. W. GREENE.

### MEDICINE AND DENTISTRY.

Quite recently a lady called on us with the request to have a small amalgam filling removed. It was the only alloy filling she had, and was in good condition. She had been sent by her physician, who claimed he could not cure a throat affection, from which she was suffering, as long as the filling was retained.

Our literature is replete with authentic reports of such cases, but an excellent illustration of the point in hand, one that has never been published, we take from the practice of Professor Peirce. A well-known neurologist had under his care a lad suffering from chorea. The case was presented to Dr. Peirce, who, on examination, found several persistent deciduous teeth, interfering with the normal eruption of the bicuspids, and these at his suggestion were removed, and within a few days the distressing symptoms disappeared. Under the care of the same was a girl subject to attacks of epilepsy, which were thought by the attending physician to be incurable, but on the removal of several deciduous teeth and two diseased first molars, the marked improvement was evidence conclusive that dental irritation was in this case also an important factor.

A well-known dental writer, the late Professor Richardson, has truly said that it is the reproach of curative medical science that patients are being daily drugged for the relief of maladies, which being purely symptomatic of, or dependent on, dental diseases or irritation, are diagnosed and obstinately and perseveringly treated as idiopathic affections.

It is also a reproach of conservative medical science that countless numbers of teeth are, year after year, uselessly and mercilessly sacrificed through the direct agency or complicity of many medical practitioners, and a reproach of sanitary medical science that, while the greatest circumspection is displayed in guarding the many approaches to the citadel of health, one of the most exposed and vulnerable points, whose defense is essential to the general safety, should be left so entirely uncared for.

Of course, all medical practitioners are not thus perverse and stupid. We number among our clients some of the most clever physicians, who are always anxious, through personal and professional intercourse, to secure any information of value. Many of us too, are called in consultation by physicians who recognize the close relationship of dentistry and medicine. But these are the exception—they are the salt of their profession. It is the average medical practitioner (which is the majority) to whom we allude.—*Independent*

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APPLICATIONS of Listerine and glycerine, equal parts, will speedily cure thrush.

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OPIUM is a good capillary stimulant and thereby a great factor in the healing of sores.

---

MAGNESIUM SULPHATE, in ten grain doses daily for several weeks will carry away warts.

---

DR. J. A. FRAZIER says that he has had success in bleaching dark joints in porcelain teeth, with 25 per cent. pyrozone.

---

ACCIDENTAL spots of blood on the clothing can be promptly removed by the application of pyrozone.—J. E. WOODWARD.

---

FOR tenderness of a tooth after root canal filling Mr. Baldwin uses fluid extract of Jamaica dog-wood, asserting that it has a far better effect than tincture of aconite and iodine.

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### DISINFECTION OF INSTRUMENTS.

A ten per cent. solution of boro-glycerin in water will sterilize forceps, broaches and cutting instruments, and leave them without unpleasant odor.—A. W. HARLAN.

THE

Dental Office and Laboratory.

FOURTH SERIES.

VOL. X. PHILADELPHIA, MARCH, 1896. No. 2.

# BRIDGE-WORK ON VITAL TEETH.

BY N. H. KEYSER, Germantown, Pa.

Aside from the commoner forms of bridge-work sustained by caps or crowns, there are certain forms that may be firmly held by vital teeth, and nicely adjusted will prove more satisfactory than either clasp or suction plates. The disadvantages of suction plates for cases requiring a small number of teeth are well known; not only do they incumber the mouth, but, particularly if single teeth are used, they are apt to produce, by undue or uneven pressure, recession of the gums upon which they unduly press. Spring plates, while very pleasant to the patient when first placed, are apt to soon loosen, indeed in many cases the pressure they exert upon the sustaining teeth will make them spread to such an extent at times as to cause their early loss. The clasp plate has also its disadvantages. With careful attention to cleanliness it is not always possible to prevent decay upon the clasped teeth. These evils have been avoided in the few cases by the method of bridging, which I will now describe.

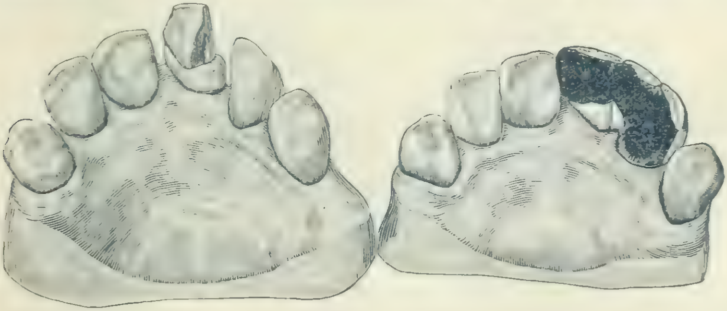

FIG. 1.

The first case, the patient had worn for some years a denture that, while ordinarily comfortable and worn with satisfaction, produced an unpleasant impression on the mouth, that induced the lady to occasionally let the plate drop upon her tongue, as she said, to rest her mouth.

Fig. 1 shows this case. It would have been impossible to have satisfactorily fastened the left central incisor on the denture. It is shown in the cut, the case was held in by a pin entering the root of the central incisor and a close fitting cap which covered the palatal portion of the lateral incisor, between the plate a "dummy" was attached which filled the space and gave a very different appearance to the mouth. The fixture was secured by gutta percha in the central pin, and cement under the lateral cap.

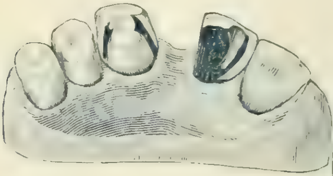
FIG. 2.

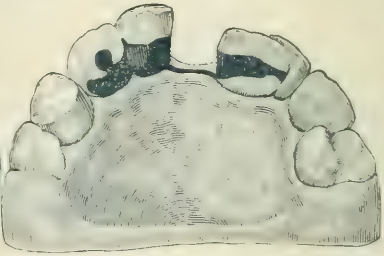
FIG. 4.

The second case, Fig. 2, is a modified form of Dr. Bennet's method, and is held in place by guide pins fitting in grooves cut on the mesial and distal aspects of the cuspid, where fillings had been inserted, with caps made to fit the palatal pit of the central incisor and the "dummy" lateral incisor soldered between; this being done without more mutilation to the teeth than the forming of cavities for fillings. On the central a cap fitted the palatal portion, with a small pure gold pin braised on, to extend into, and cover the cavity of decay in this tooth, as shown by the cut. This patient had worn a suction plate sustaining this single tooth for some years and the pressure of it had forced the gum away from the tooth. This fixture I secured in place with gutta percha.

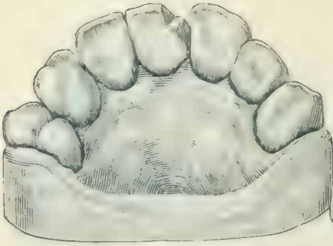
FIG. 3 A.

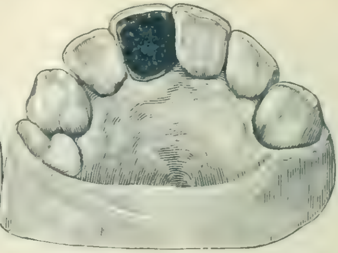
FIG. 3 B.

Fig. 3 shows a similar cap to that described above, covering the palatal face of the right central, and holding a porcelain corner on the tooth. Fig. 3 A showing the defective tooth, and 3 B the restoration, by means of the cap over the palatal portion of the tooth. In this case I succeeded in preserving the vitality of the tooth, besides restoring the tooth to its natural shape with porcelain, presenting a very much better appearance than a large gold filling would have done.

Case four (Fig. 4) was not so favorable for capping. The patient had been wearing a suction plate for some time, sustaining a tooth that had been extracted. This had commenced to decay on the plate and being the only decayed tooth in the mouth looked very badly.

Small catches were extended around the adjoining tooth, as shown by the cut, that on the cuspid being made T shape, to prevent tilting forward. On the central a small catch extended half way up so as to rest on the bulging part of the tooth.

Success in these cases, of course, depends very much on the favorable position and shape of the supporting teeth.

I have endeavored, in the cases illustrated thus briefly told, to show how, by slight modifications of old ideas, satisfactory results may be accomplished.

## A Note on Capping a Tooth Pulp.

It is often troublesome to cap a pulp with oxiphosphate of zinc on account of that material sticking to the instruments used to convey it to the parts desired to be covered without spreading it over the whole of the cavity. By the use of the following method the troublesome part can be avoided.

Take a piece of clean writing paper of the proper size and on the paper place a sufficient quantity of the cement, soft or hard, as the case requires; having taken hold of the corner of paper with the pliers before the cement was placed on the paper, carry the paper and cement to the parts to be capped, pass a burnishing instrument against the paper and burnish the capping to its place. If it is desired to get the benefit of the sticking qualities of the cement to assist in holding the filling in the cavity, put cement on both sides of the paper, before placing it in place.

The same method can be used with the paper and chloro-percha.

Not only does the paper act as a convenient carrier but it is a splendid non-conductor. Superior to almost everything used for that purpose.—C. R. Taylor, D. D. S., Streator, Ill.

[TWENTY-FIFTH PAPER.]

## QUESTIONS AND ANSWERS FOR DENTAL STUDENTS.

By Theodore F. Chupein, D. D. S., Philadelphia, Pa.

Q. Was the filling of nerve canals always practiced?

A. It was not.

Q. Why was it not?

A. Because the propriety, or utility, of it was for a long time doubted.

Q. Did not some dentists practice it?

A. It may be, but opposition to it was founded on the belief that a devitalized tooth was a foreign body to the organism, and whether the root canals were filled or not it still remained so and was obnoxious to the surrounding living parts.

Q. Is this not the truth?

A. More recent practice and experiment prove that this does not necessarily follow; and that the complete removal of all dead or disorganized matter from the roots of teeth with proper disinfection and sterilization render a tooth thus treated *not* a foreign body in the organism.

Q. Who were the first dentists to demonstrate this?

A. Doctors Maynard and Baker.

Q. What did they prove?

A. That the condition of pain and disease resulting from the death of the nerve, whether this death occured from natural causes or from intentional devitalization, was due to tho irritation produced by the septic matter contained in the nerve chamber and roots of the tooth.

Q. How did they propose to avoid this?

A. By removing all disorganized tissues from the pulp chamber and roots; sterilizing the parts with antiseptic medicines, and filling the roots, or nerve canals, as well as the crown.

Q. Is this treatment always successful?

A. Not always: but when properly and thoroughly done it frequently is.

Q. What was their rational of this treatment?

A. That by preventing the accumulation of septic matter at the end of the root or roots, where its secretion exists it would cause a cessation of it, or if not an entire cessation, that it would continue no faster than the accumulation could be absorbed.

Q. What does the treatment prove?

A. That though dead to the sensation of excavation, the tooth still possessed a secondary vitality, receiving its nourishment through its peudental membrane and cementum, and was thus tolerated by the organism, remaining comfortable and free from pain, and exerting no apparent diliterious influence to the contiguous parts or the neighboring teeth.

Q. Could these conditions be accomplished in teeth whose nerves had died and when a diseased action was set up from such death?

A. They could; but the chances of successful treatment was very much lessened when the cases were permitted to progress thus far.

Q. When the nerve has died from the natural exposure produced by extensive decay and the shocks given by taking hot, cold, sweet, acid or salt food in the mouth setting up the gradual disorganization of the pulp, which will result in alveolar abscess if not checked, what should be done?

A. The cavity of decay should be freely opened and the decayed dentine gently peeled away until the pulp chamber is reached.

Q. What ensues then?

A. A drop or more of pus will exude from the opening thus made, accordingly as the pulp is in a greater or lesser disorganized condition.

Q. What will be the result of this treatment?

A. The feeling of discomfort, pain, fullness and tension will gradually cease.

Q. Why is it better to attack the case at this point?

A. Because we prevent an immense amount of suffering to the patient, besides attacking the case at a stage where the disease has not proceeded beyond the end of the root, and thus making the case more amenable to treatment.

Q. Which cases are most amenable to treatment?

A. Those cases where we do not wait for a diseased condition to begin; but purposely devitalize the pulp, remove it from the pulp chamber and canals, and filling these, as well as the crown.

Q What is the course of treatment pursued when abcess has supervened?

A. The cavity of decay is freely opened and a fair, clear and direct approach made into each root canal. All septic matter is removed from these, the canals enlarged sufficiently to permit easy access to each and the canals treated with proper germicides, antiseptic, sterilizers and deodorizers.

Q. Do you not fill the roots and crown when this treatment is completed?

A. Some operators recommend immediate root filling "but the majority seem to think it is better to wait before filling the roots.

Q. What is done then after the roots have been treated as you have detailed?

A. The canals are loosely filled with cotton charged with some deoderizer as also the cavity of decay. At the next appointment plain cotton is introduced into the root pressed in firmly and the main cavity sealed with red gutta percha.

Q. Why not fill the roots and crown at once at this stage?

A. Because the case may not be entirely cured.

Q. How do you determine if a cure be effected?

A. It is thought that when the plain cotton is removed from the canals and this comes out clean and white without the least stain or odor that the case is ready for permanent root and crown filling.

Q. Should it not do so what is to be done?

A. The treatment is continued until all septic matter is removed.

Q. Is this the only treatment observed?

A. No—for we find diseased teeth with fistulous openings on the gum leading from one or more of the roots, and from others where there are no fistulous openings or abscesses or gum boils as they are popularly called.

Q. What is done when we find fistulous openings?

A. The canals are carefully cleaned, permitting no debris to go in advance of the reamer or probe, so that a fair clear opening is maintained from the root to the fistulous tract and opening.

Q. Why is this necessary?

A. Because if debris is permitted to choke the foramen at the end of the roots, the medicines used to effect the cure are confined within the root alone, and do not attack the disease which has its seat beyond the root and along the track of the fistula.

Q. Suppose no debris chokes the apex of the root what ensues?

A. The medicines used in the root canals follow the track of the abscess and exude through the fistula on the gum.

Q. How is this effected?

A. Generally by arming a probe with cotton, dipping this in the medicine, and using it as a piston with a pumping motion so as to force the medicine through the root apex and along the track of the abscess.

Q. Can it not be effected in any other way?

A. Yes. Some have proposed to place a drop of the medicine in the nerve chamber and to bring pressure on it by means of a piece of india rubber placed in the cavity and pressed on by a large plugger or ball burnisher. This forces the liquid medicine in all the root canals. Others again make use of an abscess syringe used with small rubber cones on the pipe of the syringe endeavoring to effect the same object.

Q. Suppose all these measures fail to carry the medicine along the track of the abscess what is to be done?

A. The abscess is then treated through the gum, by using small blunt probes armed with cotton, and endeavoring to effect a cure in this way.

Q. Is this not the most rational means of treatment?

A. It would seem so, but as these canals or tracks are sometimes tortuous, and the insertion of the probe through the gum tissue gives considerable pain, the whole of the track is not always reached, and the cure is not as often effected as when the medicine is carried through the root and made to exude through the fistula.

Q. Suppose there be no fistula, what then?

A. We must then depend on the thorough medication, disinfection and cure by treating the case through the canals of the roots.

Q. Is it not difficult sometimes to find these root canals?

A. It is often quite difficult.

Q. How are they found?

A. Their locality should be known by the knowledge of the anatomy of the tooth, but they are searched for with very fine delicate probes, but even these fail sometimes to reveal their locality.

Q. What is to be done then?

A. It has been proposed by Dr. Callahan to place a solution of sulphuric acid and water to the strength of half and half, and to seal this in the cavity. The action of the acid will eat away such debris as choke the openings of these canals and leave them free and clear for treatment. The acid is neutralized with a strong solution of bi carb of soda or with moderately strong ammonia.

[TO BE CONTINUED.]

## THE DENTAL STUDENT.

"She taught the child to read, and taught so well,
That she herself, by teaching, learned to spell."—Byron.

No subject in dentistry should command more of our careful attention than that of the student. Some of us there are who refuse to discuss the student as a living, burning issue. Away with him, ye youth of inexperience!

That this is a condition and not a theory that confronts us was amply illustrated in the report of the Secretary of the New York

State Dental Society on the enforcement of the law of 1892, requiring every person engaging in the study of dentistry to file with the Board of Censors a certificate of studentship. The Secretary in his report says: "This portion of the law has been of great value in three things: First, in revealing the large number of persons engaged in dentistry claiming to have been students ten, twenty, thirty, and two or three even thirty-five years. Secondly, the enormous percentage in the first district—sixty-four per cent. of those registering coming from New York City. Thirdly, the small percentage of those claiming to be pupils of recognized reputable practitioners of our profession. Out of the one hundred and forty-two students that have actually registered, eleven only have perceptors that are members of either the State or District Societies—twelve and one-half per cent., and if we were to take the three hundred and seventy two asking for blanks, the percentage would be still less."

This statement of facts is startling. Only twelve and one half per cent. of the students of the State of New York are with members of our State and District Societies!

It is not claimed that all the worthy members of our profession are Society members, but it none the less goes to prove that a large percentage of our students of to-day are either content or compelled to take up the study of dentistry with the "dental associations" and "dental parlors." It also goes to prove that our society members are not doing their duty in this important work, leaving the field to be tilled by the less worthy members of our profession; for it is a fact that the members of our dental societies are the representative men in their section.

Granting the teaching of the "dental parlors" to be *par excellence*, what can you say of the ethics? Association is everything; "like father, like son," is the old saying. When the student has been taught to look at the Society with suspicion, that fifty cents is the correct price for filling teeth—more is extortion and robbery—that advertising "pays," and a cheap article of dentistry is the proper thing, what can you expect of the future?

"Not for thousands of dollars would I have a student in my office," says one prominent member of our profession. Here we have the trouble. Talk as you may of "legislation" and the "elevation of the college,"—legislation may suppress total ignorance and even empiricism to a degree, but it cannot force mediocrity into thorough competence. The colleges have done much; they can only lead the way; nothing can take the place of thorough office instruction, not only in operative technics but in professional ethics and business methods.

The advancement of the profession is in our own hands; to cleanse the stream we must purify the source; to the student we must look for the dignity and usefulness of our profession—its further advancement and uplifting. How careful, then, should be the selection of the student! It is unnecessary to say that among the first prerequisites should be sufficient mechanical ability, education, and refinement.

He should be of good morals and character; the public judge you by your students, by the raw material, therefore let the standard be high, as a student of low morals or character cannot help but reflect on your office and yourself.

Take a personal interest in your student—you will both learn; to my mind it has ever been a question who learned the most, the student or myself. How easy it is to forget! What perplexing questions! But you are expected to know; and it is rather humiliating to confess ignorance of a subject with which you have been and ought now to be familiar; therefore the student is a stimulant, an incentive to review work long neglected and forgotten.

Don't expect impossibilities of the boy; do you not see your own mistakes reviewed before you? It is given to only a few of us to be "born dentists." Save and protect us from some of the specimens we have encountered!

Do not make a playfellow of him; it may be that no man yet was ever a hero in the eyes of his valet, but let that be no excuse for sacrificing your dignity or authority Keep him in the laboratory; he will have plenty of opportunities at college to learn operating; the country is full of second-class operators, but good mechanical workmen are like angels' visits—few and far between.

Teach him that he must first acquire principles before he can apply them, that the study of physiology is impossible without a thorough knowledge of anatomy.

See to it that he selects a first-class school for his education—you are responsible for this. You may say that it makes no difference so long as he has a diploma. No, indeed! there are colleges and colleges, diplomas and diplomas. The public are becoming rapidly educated; they know the good and poor schools. Talk with some of your patients, and you will be surprised at their knowledge. Graduation from a first-class college is a benefit all through life; one makes associates and acquaintances that are of incalculable value; the better the school the more desirable the associates.

He comes back from college, "simple as a child, green as a salad," to tell you "the latest." How boldly he offers suggestions, ay, even criticisms! Deal with him kindly; he will soon see the error of his ways. He is, in his own mind, a greater man, a better dentist, than he ever will be in the future; disappointments, failures, trials, temptations, and the loss of self-confidence will insure a balance—they come to all of us. What one finds the world just as he likes?

Youth and new wine each need the mellowing influences of time to bring them to their greatest perfection. Wine is wine, the juice of the grape. Yet time and age do not necessarily bring to it excellence; care, experience and attention are necessary in its production; so in youth, golden opportunities and natural ability are not always the forerunners of prosperity and success—age, experience, adversity, temptations resisted, hopes deferred, trophies unwon, all go to the formation of character, life, the crucible; cares, the fiery furnace, freeing from dross, forming true character and manhood.

Give him good advice and, best of all, good example—not that he needs the advice or will accept it.

Tell him your mistakes; not that he ever expects to make any; oh, dear no! It is surprising how little we learn from others; their failures are nothing to us; we are so constituted that we cannot to any degree profit by another's experience. If we only could begin where another man left off; if he might endow us with his knowledge and experience the same as his goods and chattels, how wise we might be!

It has been truthfully said, "There is no royal road to learning;" every man must have the experience of the man before him; after a time comes judgment, ay, even conservatism, if you please.

Time passes, and our young man starts out for himself, only to find that a college education and a high-class standing are not always the open sesame to practice. The practical application of principles is not so easy, but, like Anteus of old, rising from each defeat with added strength, the elusive god of prosperity smiles on him. Really, the boy is doing better than yourself. Are you jealous? Not a bit; he is yours—your creation; you glory in his success and exult in his prosperity. After a time it is supposed you go to see him; how proud he is of his office, of his acquaintances, and the boy actually seems to be proud of you! How prosperous everything appears! Let us hope it is not all on the surface; that he is an exception, a true *rara avis*—a dentist and a business man.

It is to be hoped that he will continue to be a student, to learn what little he may of the boundless store of knowledge; that he will attend the dental meetings, exchange ideas with his brethren, and be superior to the little jealousies which are always marks of the narrow mind, and become the master-craftsman, looking down the vista of time to the twenty triumphs behind him, recalling with pleasure the paths which have led him to fame, and at last, like unto the Moses of old, behold the promised land denied to him, but of which he and his time have been the auspicious pledge—a professional standing, yet higher, greater and better, in the age yet to come.—WILLIAM H. BELCHER, D. D. S., Seneca Falls, N. Y., in *International.*

## PERPLEXITIES OF DENTISTS.

### DR. EZRA F. TAFT, Cambridge, Massachusetts.

We see at once that education has had its influence. It makes no difference whether it is a practitioner in an exclusive locality in one of our large cities, or in a wooden business block of a back country town. If he is a dentist taking such a stand as will do honor to his profession, his callers will be the rich and the poor, the educated and the ignorant; those who appreciate good work, and those who are so distrustful as to ask many questions before even telling why they have called. They are callers, but not all patients. If a man's time is fully occupied, he will naturally work for those patients who most appreciate his work, and are willing to pay what it is worth. Fortunate is he if he can employ some assistant to relieve him of multitudinous cares, and especially to see all visitors.

An early appointment, to accommodate some one who is going away, finds your first patient a little late on account of early house hold duties. You begin your work for her, however, when some one steps in just for a moment to speak of one of the many hundred things that seems little to the patient, but which is a certain amount of hindrance to the practitioner.

Next, a gentleman calls on the way to his business to make an appointment for his wife. A lady has entered; the rustling of paper in her hand gives you encouragement that a bill is to be paid, and you gladly step in to see her. Your surmise is correct; but, before handing you the money, she begs you to look at your books, to make sure there was not a mistake in the number of fillings indicated in the bill. She is sorry to detain you, but it will only take a minute, and she will be better satisfied.

A nervous, fidgety woman steps in next, to say, with a voice heard almost in the street, that she had not worn that under set of teeth hardly an hour since they were put in. They would not stay in place, and her mouth was too sore for anything.

A little girl runs in to tell you that her mother was obliged to go away and couldn't keep her appointment the next day, and, after taking several minutes in studying the appointment-book, another time is set. A self-important young man, in joyous costume of latest cut, holding a lighted cigarette between his fingers, would like to know if you had any leisure time this morning, as his wisdom tooth was giving him trouble.

If you are in full practice it is a great help to you, and is money well expended, to have some kind of assistant; yet even then it is often necessary for the dentist himself to see the caller. Many reserve parts of the day for consultation, examination, etc.; yet I do not believe it is possible to carry out that plan, as but few patients would learn of that rule, and when known it would be almost impossible to confine themselves to certain hours. You are in a profession depending on the public for your practice, and to the public you must cater. If your time is fully occupied, you would be glad to put up a sign on your door as to whom you would like for patrons, but that also is impossible. Your callers are from all classes. You must be, at least, civil to every one. Fortunate is that man whose practice is not a local one, but whose patients seek him from miles around, and who makes many of his appointments through the mail. We speak of a man who, through good work and a good name, has secured a large practice, and has the most of his regular office hours filled with appointments for two or three weeks in advance.

The dentist who is in full practice can have no respite during the working hours of the day; and it is not simply mechanical labor, but a continuous effort of the mental and physical powers of the operator. He will work for one patient only a short time, whose nervous organization is such as to try the most patient man. He will work for another a full half day, and, on account of the equanimity and serenity of this person, will be but very little tired, and fully equal to the work required of him the rest of the day. Standing, as many do, from 8 or 9 in the morning till 5 in the afternoon, with one hour's intermission at noon; and not only this, but meeting and working for all classes and conditions of men; children, whose eyes and actions show an uncontrollable fear; women, whose nervousness stands out in their very voice; men, whose time is so valuable that their impatience is almost unendurable—under these varied circumstances, what is to be expected? There may be a constitution now and then made of iron; there may be a nervous organization so wiry that no amount of twisting and pulling can harm it; there may be one occasionally who has the happy faculty of so directing his work that it leaves no bad results; but the average man can not do this. With his time all occupied, he finds himself at the close of the day a mental and physical sufferer. Let this be kept up and the overstrained nerves will finally yield. Physically, there are few professions calling for such constant strain on one's system. The enforced and unnatural position, which must be sustained for so long a time, will introduce us to the pangs of rheumatism, lumbago, and kindred ills. The strain on the eyes, which is so constant, brings on a series of head troubles, from which very few of us are free. All this means that the average practitioner is doing more than he is able, and does not know any method of lightening his labors, and still hold the practice he desires to have. It means that he is not master of his own time, but a slave to his patients and friends.

Three brothers were comparing notes on their different occupations—the one a bank teller, the second a physician, the third a dentist—each claiming his life was a struggle, and more undesirable than the others.

The teller, especially, laid stress on the fact that his time was not his own; that his hours were defined, his work was to be done every day, with no cessation. Whatever his physical feelings, or his longing for a little outing, he was under the control of a higher power that said "No."

The physician felt he was a burdened man. To be sure he was his own master; but his life-work was to battle with disease, and as he had the care of the health of different families, he had great responsibility; he must be ready to go night or day, and have but very little leisure or time that he could calculate on as being his own.

The dentist's life was looked on by the other two as most attractive by comparison; perfect control of his time by appointment, making his day as long as he saw fit, drawing such a line among patients as to exclude those who were undesirable, and, finally, so remunerative—large fees with but very little expense.

Doubtless this is the way our profession is regarded by many who look only on the surface, but the busy dentist could quickly convince them of their mistake, and prove to them that his calling ranks among the most wearing of occupations, physically and mentally, made so in part by petty annoyances to which I have before alluded. If, then, the daily routine of our professional life is such that not only is our time taken up with regular appointments, but we are usually overcrowded by reason of the many interruptions which must come in every man's practice, we must conclude that we are bowing ourselves too much to the will of our patients; we are not free men to do with our time as we would wish to. We have our intimate friends, our old patients—yes, new ones whom we are anxious to hold, who appear before us and ask our favors. The solution of the problem is a difficult one. You may say the remedy lies in two ways—have some one to assist you, or be wilfully independent. I cannot believe the assistant will very much relieve the situation, and such independence is contrary to our nature. Let us, then, accept the situation, that while we are professional men we are also Yankees—after the almighty dollar. We seek for honor, and wish to be held in esteem by the public and our professional brethren; but we also wish to make a living, do something more than simply pay our expenses. Very natural, then, when overcrowded with patients, to try and accommodate all, to work early and late rather than let some slip from our grasp. Under these circumstances what must the dentist be to withstand all this and meet with success? He must be a lineal descendant of both Job and Samson. He must be firm, and yet sympathetic; be able to so control the mind of his patients that they will not worry him; be amiable, and woe to him who loses his temper. Good humor will sell more goods, build the best houses, plead the most successful cases, write the best sermons, and perform the best dental operations. Some one has said, "A melancholy musician may compose a dead march, but he cannot storm the castle of the soul with the rhythmic artillery of lovely light and joy." A melancholy poet may write Dante's "Inferno," but he cannot give us Milton's "Paradise Lost." The world is full of music. The man who can sing and will not sing ought to be sent to Sing Sing.

"It is easy enough to be pleasant
  When life flows by like a song;
But the man worth while is the one who will smile
  When everything goes dead wrong."

If it is impossible to curtail our work while in the office, let us do all we can to recuperate when out of it. Let us ride some hobby. In change we find the most perfect rest. Don't forget the couplet of Oliver Wendell Holmes—

"Run if you like, but try to keep your breath,
Work like a man, but don't be worked to death."

*International.*

## VARNISHING CAVITIES.

W. G. Browne, Atlanta, Ga.

The incompatibility of tooth-substance and the metals we use for filling teeth is a well recognized fact, and it is always good practice to interpose some substance between the metal and tooth-structure to prevent, as far as possible, any injurious effect from such incompatibility. Gutta percha, chloro percha, cement, and varnish, each have their merits, but none seem to have so many points of excellence as a clear resin, such as damson, dissolved in chloroform. It acts as a non-conductor of thermal changes, as well as an insulator against electrical influences. It is not readily soluble in the fluids of the mouth. Being transparent, no discoloration is shown when used, where enamel walls are thin; in fact, it prevents discoloration of the tooth from oxidation when an amalgam is used which contains metals which oxidize in the mouth. To a limited degree, it may act as a support to frail walls of enamel, especially if the filling be inserted while the varnish is in a plastic state; this refers more especially to amalgam fillings.

In the insertion of large gold fillings it is helpful in starting the filling, holding the first mats or cylinders of gold firmly adherent to the dentine, and makes it almost out of the question for gold fillings to come out if proper attention has been given to the method of applying the varnish and gold in the tooth when commencing the filling.

I do not for a moment advance the idea that we should depend on the varnish to retain the filling, independent of other means, but it will not be found necessary to make deep retaining pits, but only slight undercuts in most convenient places in the cavity, thus saving the operator valuable time, and no harm can possibly result from its use, while much good must come.

I am satisfied that when the profession realizes the benefits accruing from this method it will be universally adopted —*Items of Interest.*

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## A FEW FACTS ABOUT ALUMINIUM.

A paper read before the Alabama State Dental Association, May, 1894.

By Thos. P. Hinman, D.D.S.

Aluminium, the coming metal of the age, about which so much has been said, was discovered by Wohler, in 1827, and isolated by him in 1846. Some authorities, however, claim the honor for Sir Humphrey Davy. Aluminium is an exceedingly light metal, having a sp. gr. of 2.6, an atomic weight of 27, iron being four and gold eight times as heavy. Aluminium has a rather low fusing point, being 1292 F. The tensile strength of Aluminium is 12, that is, it will take 12 tons to pull asunder 1 square inch. Iron having a tensile strength of 29; Silver, 18 2; Gold, 13. In tenacity and malleability nearly equaling gold and silver. In ductility, it ranks seventh among the metals, conducting power of heat, it ranks fourth, conducting power of electricity, it ranks better than iron. It tarnishes very slowly, and it is not affected by sulfurreted hydrogen. The solvent of Aluminium is hydrochloric acid. The market value has been reduced to sixty-five cents per pound, and fresh uses are being discovered for it every day. The only reason that the price remains so high is in the fact of the cost of separation, as the materials used in separation are very dear, for there is more Aluminium in the world than iron, it forming 7 per cent. of the earth's crust and every clay-bank is a mine of it.

It has nearly driven silver out of the arts, and will finally supercede it entirely on account of its non oxidizable properties and its great malleability; the leaf being used in all kinds of decorations in the place of silver. Aluminium is a very sonorous metal, and when a bar of it is struck, gives off a beautiful metallic sound.

This country, in 1883, produced 33 pounds of Aluminium; in 1892, the output of the United States was 260,000 pounds; in 1893, one firm in Germany turned out 720,000 pounds. Up to January 1, 1893, the total output of the world was 1,000 tons.

The domestic production of Aluminium will be largely increased no doubt by the utilization of the power of Niagara falls. Slate pencils are being made of it, shoes for race horses, racing shells, 1.19th of an inch thick are made of it. These boats being lighter than cedar. It is used for roofing in sheets like tin, for kitchen utensils, as an Aluminium pot costs no more than a copper one and does not corrode, its lightness also being a great advantage. It can be rolled to 1-2000 of an inch in thickness and can be plated with gold, silver and nickel. It can be drawn down to the finest wire. Various accoutrements for soldiers are being made of it, such as breast plates, belts, buckles and helmets, and even cartridge shells are being turned out of it.

Aluminium, added to type metal, makes it more durable, and added to steel, makes it more fluid. A new and beautiful alloy is made by mixing 22 parts of Aluminium with 78 parts of gold, the result being a beautiful, rich, ruby tint; this alloy is susceptible to a high polish. Sounding boards for musical instruments are made of it, which have the richest tones, propellers for ships, valves for air brakes, and various domestic articles.

The time is fast approaching when nearly all of our dental instruments will be made of it.

It is an ideal metal for a dental cuspidor and the frame work of a dental chair made of it would be magnificent.

It is not acted upon by organic secretion, hence it is most desirable for surgical purposes, such as instruments and suture wire.

It is absolutely non-magnetic, but a splendid conductor of heat and electricity; for this reason it is a most perfect metal for electrical purposes. The addition of a small per cent. of silver renders it harder and stronger, this alloy being extremely useful for engineering instruments.

The first public use to which it was put was to cap the Washington monument, in 1885. Aluminum costing at that time, $8 per pound; this cap has since saved that magnificent monument from destruction by lightning.

Until recently, the only available material for supplying Aluminium was "cryolite," which had to be brought from Greenland, but lately, however, enormous and inexhaustible beds of Beauxite (which is the hydrated sesquioxid of Aluminium), have been discovered in Georgia and Alabama. This bed is 85 miles long and 25 miles wide, running through eight counties. This bed contains 48 per cent. of the wonderful metal. It is separated from its oxid by passing through it a powerful current of electricity, thereby subjecting it to an intense heat, driving off the oxygen and leaving the pure Aluminium.

While all of this has been going on in the mechanical and scientific world, our profession has not been slow to take Aluminium and adapt it to our profession, making crowns, bridges, and dentures, it being in some cases preferable to gold, on account of its great compatibility with the oral tissues. One great advantage which Aluminium has over gold, is in the fact that it can be worked successfully in its pure state, whereas in gold, in Prosthetic dentistry, we nearly invariably work an alloy.

The great drawback, and the only one that prevents its perfect ascension into dentistry is in our inability to perfectly solder it, but this problem, I am delighted to say, is being rapidly solved and the time is fast approaching when we shall be able to solder it as perfectly as gold. For fully two years, I have used Aluminum in making crowns, and not having a solder with which to thicken the cusps, I have used amalgam, working it very dry. These crowns have given perfect satisfaction. I make these crowns by the Morrison seamless method and can, in good faith, recommend them to my fellow-practitioners.

If rubber is vulcanized between Aluminum foil, it comes out beautifully polished and is not discolored as when tin foils are used for this purpose. Aluminum makes an ideal matrix for use with amalgam or cements, it being so soft, it can be formed around the tooth nicely, and oiling the surface lightly, prevents the sticking of the filling materials.

Alumnol an Aluminum salt of Napthol sulphonic acid, containing

15 per cent. of sulphur, of the sulphone group and 5 per cent. of Aluminum, was discovered by Drs. Heinz and Liebrecht, of Breslau, Germany. Alumnol is a non-poisonous antiseptic astringent, which exerts more than a superficial action. Solutions of Alumnol have an acid reaction, like solutions of all Aluminum salts. They all precipitate albumen, but Alumnol differs from solutions of other astringents, in the fact that the precipitate redissolves in an excess of albumen, it is in view of this fact that we get the deep seated action of Alumnol. Further, Alumnol dissolves in purulent secretions, which is a great advantage, for this excludes the possibility of choking up cavities by coagulation of the albumen.

I have found Alumnol to be a splendid cure for inflamed gums over wisdom teeth, giving relief in from 12 to 24 hours, reducing the inflammation very rapidly, without any injurious results. I take the pure powder and place it, by the aid of a thin instrument, underneath the gum, where it is very rapidly absorbed by the overlying tissues.

In its use as a mouth wash, one half to one per cent. solutions are strong enough. I have a sample of Alumnol with me and will be pleased to show it or demonstrate its virtues.

## NITROUS OXIDE AND ETHER.

By Dr. Alex. Wilson, F.R C.S.

In the combination of nitrous oxide and ether we have the most perfect anæsthetic agent at present available, The advantages of both are fully obtained without the disadvantages of either, There are combined all the best features of nitrous oxide, its pleasantness, and its rapid action with the prolonged anæsthesia of the ether.

The patient passes quickly under the influence of the gas, and once unconscious, the ether is gradually turned on, and insensibility can be maintained indefinitely by its action.

There is no struggling, no coughing, or resisting the ether, and the salivation is reduced to a minimum, or is entirely absent.

There is further, the great advantage that the anæsthetic effect can be carefully graduated. If only a little extra time is required a little ether, with the last bagful of gas will sensibly prolong the nitrous oxide anæsthesia without leaving any ill effects in the way of sickness. The stimulating effects are most marked,

There is no need to dilate upon the phenomena of the nitrous oxide and ether anæsthesia, they are similar to those produced by ether alone. Of course it requires practice to be successful with it.

The time at my disposal does not permit me to notice methylene, bichloride, and other anæsthetics My experience of them has not been really extensive, and not such as would lead me to prefer any of them before gas and ether or chloroform as routine anæsthetics.

In conclusion, I would like to tell you that I began my career as an administrator of anæsthetics, with a strong prejudice (possibly inherited), in favor of chloroform. As sole administrator of anæsthetics to the Infirmary for four and a half years, my total number of administrations of anæsthetics amounts to about 5,000, the great majority of which are chloroform cases. It was after an extensive experience with chloroform that I began to use ether, and now, though I would never hesitate to use chloroform, I infinitely prefer gas and ether. This preference for ether (given with gas), is also shared by certain surgeons, for whom I previously used to give chloroform The transition from chloroform to gas and ether was easy, and the advantages self-evident, but I admit it was with difficulty that I broke myself in to the giving of pure ether.

## MAGNESIUM HYDRATE.

The use of an antacid is frequently indicated in the mouth in cases of acid secretions, erosions, and other like pathological conditions. A friend lately sent us a bottle of Phillips' Milk of Magnesia, and this has taken the place of all other alkalies.

The use of magnesia as a laxative, or mild cathartic, in the form of effervescent citrate, or as Epsom salts, is too well known to need comment. But there certain inconveniences attending its employment, such as the danger of forming insoluble concretions in the bowels, through its precipitation from the compounds in which it was an element. In its present form it is a complete hydrate, and hence, is not subject to precipitation by the neutralization of any of the ingredients which hold it in solution in a compound.

It is pleasant to the taste, and if a teaspoonful be taken into the mouth at bed-time, and rinsed about until it comes in contact with the teeth, it will form an antacid coating which will remain for some time, thus materially increasing the benefits to be derived from it. There is no preparation within the sphere of our knowledge which is so useful in acid erosion of the teeth, and it should be prescribed freely in all such cases. It may be used subsequent to cleaning the teeth after each meal, and should certainly be employed at night and morning.—*R. S. Barrett in Practitioner.*

## BOOK NOTICE.

THE PRINCIPLES AND PRACTICE OF DENTISTRY, including Anatomy, Physiology, Pathology, Therapeutics, Dental Surgery, and Mechanism. By Chapin A. Harris, M.D., D.D.S., late President of the Baltimore Medical College, author of "Dictionary of Medical Terminology and Dental Surgery," thirteenth edition. Revised and edited by Ferdinand I S Gorgas, A.M., M.D., D.D.S, author of "Dental Medicine," editor of Harris' "Dictionary of Medical Terminology and Dental Surgery," Professor of the Principles of Dental Science, Dental Surgery, and Prosthetic Dentistry in the University of Maryland. With twelve hundred and fifty illustrations. Philadelphia: P. Blakiston, Son & Co., 1012 Walnut Street—1896.

It is a pleasure to record the re appearance of this valuable work to the Dental Student in its Thirteenth Edition. The book is placed before us with many improved features. The size reduces it almost to a manual; the typography reflecting the skill of its renowned publishers, and the engravings improved and in every way worthy of a work which has earned for itself renown from its intrinsic merit. The revision has been very careful and thorough, and from our notice of some of its pages we see how much labor has been devoted to the re-writing. The book may be truly classed as a "Multum in Parvo" of dentistry, as it embraces every subject of interest to dentists, who, if they know this one work thoroughly, leaves little to be desired in farther acquisition.—ED.

## THE PRACTICAL PLACE.

### TO RENEW RUBBER DAM CLAMPS.

To brighten and make nearly as nice as new, rubber-dam clamps that have lost the plating and become rusty and discolored, dip them in a bath of sulfuric acid, then remove, and with brush-wheel and pumice make bright. Wash clean and dip in a strong solution of cyanid of potassium, and they are ready for the plating solution. This is made as follows: Put in a six-ounce bottle about 10 cents' worth of nitrate of silver and four ounces of soft water. When thoroughly dissolved, add strong solution of common salt till the curdled appearance given by the salt ceases to form. When settled, use the clear portion for a battery. To make a simple and inexpensive battery, put the liquid in a glass tumbler; having two narrow strips of zinc, one to hook on to the edge of the tumbler, the other to hold the clamp or article to be plated in solution. On the upper end or hook of the zinc strip to hook on the side of the tumbler, soft-solder a piece of copper wire long enough to reach across tumbler and down half way the opposite side; and on the other end of the wire solder a ten-cent piece of silver for an anode. Put sufficient plating solution in the tumbler to cover the article to be plated, leaving them in for fifteen or twenty minutes, or till nicely covered. Now remove, and with brush wheel brighten it. Repeat as many times as you wish; each time gives an extra plating. Other uses will be suggested; for nothing is more attractive in a dental office than bright, clean instruments.—W. J. MILLER, Chicago.

### SETTING CROWNS WITH CEMENT.

Before setting the crown wipe the gums around the root with a solution of perchlorid of iron, which will prevent weeping, protecting the cement till crystallized,—E. L. CUSTER.

### TO OPEN UP A BLIND ABSCESS.

With a small swab apply a drop of trichloracetic acid on the gum over the apex of the root; twist the swab gently, applying more acid till you reach the alveolus; with a spear pointed drill go through the alveolus to the sac; with a swab apply carbolic acid (Calvert's No. 1, full strength), thoroughly permeating the tumor; if necrosis is present enlarge the opening and get direct contact with the diseased bone; syringe out the tract with pyrozone, and pump in concentrated lactic acid; saturate a small tampon of cotton with campho-phenique and aristol, and leave in the opening for two or three days till connective tissue begins to form.—A. C. HART.

### MENDING BROKEN PLASTER CASTS.

Nothing equals oxiphosphates for mending broken plaster casts or plaster teeth.—GORDON WHITE.

### NAPOLEON'S CARE OF HIS TEETH

The following picture of Napoleon's dental toilet is interesting. "Having washed his face and hands, he picked his teeth very carefully with a boxwood toothpick, and then brushed them for some time with a brush dipped in opiate; went over them again with fine tooth powder, and rinsed his mouth with a mixture of brandy and fresh water. Lastly he scraped his tongue with a scraper of silver, of silver-gilt, or of tortoise shell. It was to these minute precautions that he attributed that perfect preservation of all his teeth, which were beautiful, strong, and regular. During the whole of his reign he never appears to have had recourse, except for scaling, to Dubois, his surgeon-dentist, borne on the list for 6,000 francs, and the recipient of a gold traveling case, the instruments in which were for the exclusive use of the Emperor."

### Simple Method of Cleaning Impression Trays.

Give the impression trays a boating of sweet oil with a woolen cloth dipped in the oil. Put them in strong soap suds (made with soap shavings or powder), boil and wipe dry. Now polish with whiting by using a soft woolen cloth, or fine leather. In this way you can keep your trays bright and clean, and the plaster will not adhere to them.—E. B. Edgers, D.D S.

### Care in Vulcanizing when an Aluminum Plate is Made.

Dr. E. R. Johnson says: "A temperature of 350° will soften aluminum. Where vulcanizing is done at 320°, the inside of the vulcanizer will be at least 340°, and should the temperature of the vulcanizer run up a few degrees above 320°, as is often the case, the metal will come out soft. The vulcanizing should be done at 300° for an hour and thirty minutes.—*Extract Dental Practitioner and Advertiser.*

### Disinfection of Foul Root.

Perchlorid of mercury dissolved in absolute alcohol—two or three grains to the ounce; strength of the solution to be modified by the condition of the canal and cavity.—*Dental Record.*

### Persistent Hemorrhage after Tooth Extraction.

R.—Tinct. digitalis........................................fl. ʒiss.
Tinct. catechu........................................fl. ℥j.
Fl. Ext. ergote........................................q. s. fl ℥iij
M.—Sig. Dessertspoonful every two hours.

Give one dose, and then syringe sockets with hot water and pack each socket tightly with absorbent cotton dipped in tannic acid. Place a piece of rubber dam over the plugged surfaces, and insert a lump of warmed wax with metal.

### Opening Up Root Canals

Adjust rubber-dam and apply a drop or two of a 40 or 50 per cent. aqueous solution sulphuric acid to shrink and toughen the pulp. After removal of pulp, place a drop or two of the sulphuric acid solution over the mouths of the canals, and with a No. 5 Donaldson nerve canal cleanser, enter slowly and carefully, with a pumping motion. When all the canals have been thus treated, flood the cavity with a saturated solution of bicarbonate of soda. Effervescence will carry all broken up tooth and pulp substance out of the canals and cavity on to the rubber-dam ; cleanse with sterilized water, alcohol or peroxid ; dry the canals and fill.—J. R. CALLAHAN.

## SENSITIVE DENTINE OBTUNDER.

At a recent meeting of the Stomatological Club of San Francisco, Dr. M. W. Levkowicz made on exhibit of a saturated solution of potassium carbonate in glycerin for correcting sensitivity of the dentine. The following discussion, appearing in the *Pacific Coast Dentist*, seems to confirm the Doctor's claims :

Dr. Clyde Payne : I had occasion to use carbonate of potassium yesterday in a cavity of a cuspid ; I could not even ligature on account of its sensitiveness. In a few minutes I applied the clamp and put on the rubber, then applying it again to the cavity I was enabled to excavate thoroughly, the patient claiming that it did not give her any pain at all.

## CLEANING GREEN STAIN.

Pyrozone, three per cent., moistened with pumice, adding one or two drops of phosforic acid, used for cement fillings, is good for green stain on teeth. A tumbler of warm water, containing a little carbonate of soda, is good for rinsing the mouth.—S. B. PALMER.

## A HINT.

Dr. J. E. Davis, in an article in the *Items* says :—" A common hypodermic syringe is superior to an expensive abscess syringe in forcing medicine through dead teeth with fistulous opening ; simply press a pellet of soft unvulcanized rubber in the tooth cavity ; thrust the needle through this in the canal , hold the rubber pellet in place, and you can get all the pressure you want to force medicines through the canals."

## SOLDERING GLASS WITH METALS.

C. Margot finds that on heating glass to the melting point of aluminium, its adhesion to the metal is very marked. It is possible to spread the aluminium over the surface of the glass with an iron spatula. It it suggested that this property may be utilized for cementing together the parts of glass apparatus used in laboratories. Magnesium adheres in the same way, more easily than aluminium, but is oxidized too readily to be used as a substitute. Zinc also possesses similar properties. Ordinary plumber's solder, alloyed with a small proportion ot magnesium, can be spread upon hot glass like sealing wax, but unfortunately these alloys are too readily attacked by the moisture of the atmosphere.

### To Mummify Pulp in Inaccessible Canals.

Apply a paste of tannin with equal parts of creosote and oil of cloves.

### Drops.

Dr. Eder, in the following table, gives the number of drops required to make a cubic centimeter, showing the variations in the size of drops of different liquids:

| | |
|---|---|
| Water | 20 |
| Hydrochloric acid | 20 |
| Nitric acid | 27 |
| Sulphuric acid | 28 |
| Acetic acid | 38 |
| Castor oil | 44 |
| Olive oil | 47 |
| Oil of turpentine | 55 |
| Alcohol | 62 |
| Ether | 83 |

—*Scientific American.*

### Cleansing Paste for the Hands.

To half pound pulverized borax, add one pound carb. soda and half pound fine pumice, with sufficient glycerin to form a paste. Use in place of soap to cleanse and whiten the hands.—A. C. Hewitt.

Twenty-four carat gold is all gold; 22 carat gold has 22 parts of gold, 1 of silver and 1 of copper; 18 carat gold has 18 parts of pure gold and 3 parts each of silver and copper in its composition; 12 carat gold is half gold, the remainder being made up of 3½ parts of silver and 8½ parts copper.

### The Use of Steresol in Local Anæsthetics.

M. Creigner, of Paris, says, "Local anæsthetics of different kinds are used for the painless extraction of teeth. The method of applying them often produces as much pain as the extraction itself. To overcome this difficulty different remedies have been applied, but with little success. Steresol has so far given the best satisfaction; when painted on to the gums it forms a skin or coating, benumbing and protecting them from the cold produced by a spray, or from the insertion of the hypodermic point. I have used it for some time, and have found that I can use Coryl (which is a favorite local anæsthetic in Paris—C. E. K.), without the slightest pain or disagreeable effect to the patient, and have been able to extract teeth, and some very difficult to extract, without the patient showing the slightest indication of pain. Steresol is a new preparation, and permits, under favorable circumstances, to apply antiseptic dressing, which otherwise could not be done. Its use in dentistry is varied, and it can be applied to ulcers or abscesses, wounding of the tongue, lips, and gums, etc. In consequence of its continued antiseptic properties it will destroy all microbes with which it comes in contact. It will also obtund sensitive dentine, applied on a pellet of cotton to the cavity."—CARL E. KLOTZ, St. Catherines, in *Zahntechniche Reform.*

### SOZODONT.

This widely advertised tooth-wash is of indifferent value when compared with standard articles. It is composed of soap, glycerine spirits, cheap oils, and coloring matter.

### A NEW USE FOR GUTTA PERCHA.

Gutta percha can be softened almost to a liquid in boiling water to which a little glycerine has been added. In this softened state it will not only absorb tannan and chloride of iron, but also benzine, carbolic acid, salts of mercury, and other hæmostatic and antiseptic remedies. It will retain its efficiency indefinitely. After the gutta percha is saturated with the drug, allow it to cool and form into pellets or roll into sheets. To use it, soften in warm water.

### OVER MEDICATION.

In treating alveolar abscesses, we may have too much of a good thing. In pumping carbolic acid, peroxide of hydrogen, bichloride of mercury, etc., into alveolar abscesses, periods of rest ought to be allowed, or only warm water substituted.

### SOLUTION FOR DISINFECTING INSTRUMENTS.

| | | |
|---|---|---|
| ℞ | Resorcin ................................... | gr. x. |
| | Water ........................................ | min xc. |

I use copper points, made from wire, such as are used for electric bells, thus: Fill the apex of root with chloro percha. Moisten small gutta percha point in chloroform and press down. Heat the copper point and drive home. If the proper length is first taken and the larger end flattened slightly you have a support for your alloy, which will adhere perfectly to the copper, that cannot be excelled. I have used these points for over three years, and am more in love with them each time they are employed. Employing the gutta percha point first prevents any discoloration of tooth.—C. D. HAND.

REMEMBER, if anæsthetics are used, to always have fresh nitrate of amyl on hand. A few drops upon a napkin is the best means of restoring the heart's action in case of syncope.

### TO PREPARE GUTTA PERCHA FILLING MATERIAL.

A method is given by Dr. A. H. Stoddard, Boston, in the *International Dental Journal*, to prepare a gutta percha filling material that softens at low heat, packs readily in the cavity, does not drag, yet becomes hard after it has been in the mouth for some time.

It is prepared from Knapp's sheet gutta percha, is cut into strips and allowed to stand two or three days in a solution of oil of cajuput and chloroform, equal parts. Then it is warmed till it becomes thoroughly soft, and plaster of Paris is added till it becomes about the consistency of putty. It may then be taken into the hands and kneaded thoroughly, rolled into strips, and allowed to remain in the open air till the chloroform and cajuput evaporate, when it is ready for use.

### CLEANING CLOTHING.

Mullerson's preparation is a mixture of turpentine, 26½ parts; ammonia solution, 19 parts; methylated spirits, 25 parts; ether, 2¼ parts; acetic ether, 2¼ parts; and water, 25 parts, all by weight.

### DISINFECTION OF INSTRUMENTS.

Boro glycerin, combined with sulfate of zinc, affords an agent capable of disinfecting all instruments with no danger of staining the teeth, poisoning the patient, or injuring the instruments.—A. W. HARLAN.

### DISINFECTION OF INSTRUMENTS.

(1.) Sterilize coarse building sand by roasting. To fill a suitable vessel with this, and pour in a sublimate solution 4 per cent., or lysol 50 per cent., till the sand is thoroughly soaked; keep covered with a sterilized piece of pasteboard, pass all instruments through this three or four times—offers simplicity, rapidity, absolute sterility, no injury to instruments —DR A. W. HARLAN.

(2.) A ten per cent. solution of boroglycerine in water will sterilize forceps, broaches and cutting instruments, and leave them without unpleasant odor.—*Items of Interest.*

### SUPERFICIAL CARIES AND PARAFINE.

Cut out the superficial decay and dry thoroughly with chloroform. Then soak the cavity with melted parafine, and you will prevent further decay. This method is much superior to nitrate of silver, which blackens the teeth.

### A RELIABLE OBTUNDENT FOR SENSITIVE DENTINE.

| | | |
|---|---|---|
| ℞ | Cocain | grs. v |
| | Carbolic acid | grs. xx |
| | Chloroform | ʒ ss |
| | Muriatic acid | ♏ x |
| | Alcohol | ʒ ij |

—C. N. PIERCE.

### COCAIN UNDER PRESSURE.

Knowing the chances of doing harm to the patient when the hypodermic needle is used, even with a two per cent. solution, I have not been willing to take the chances of employing it in that way, but have confined myself to applying it locally under pressure with suitable compress, always using a ten per cent. emulsion, and in that way have had the most flattering success. The pressure seems to empty the tissues of the blood, and in that condition the gums are more susceptible to the action of cocain.—G. M. MERRITT, Jersey City.

### SWAGING ALUMINUM PLATES.

Place a piece of paraffin paper between the die and the aluminum; over the aluminum place thin rubber dam and mallet in proximate form. Remove the rubber dam and place paraffin paper between the aluminum and the counter die, Prevents both leading and battering.

### TRICHLORACETIC ACID IN NOSE BLEED.

Prof. Cozzolino (*Journal de Medicine de Paris*), recommends in epistaxis the local application of a 3 per cent. solution of trichloracetic acid. The end of a probe is well wrapped in cotton, dipped into the solution and applied to the mucous membrane of the septum, whence generally proceed severe nasal hemorrhages. To prevent a burning sensation a little 10 per cent. solution of cocain is added. The hemorrhage will generally cease at once. It is superior to the traditional perchloride of iron in that it is aceptic and acts still better as a styptic.

## Facial Fistula.

When a fistula has opened on the outside of the face, on account of poulticing or from any other cause, do not extract the offending tooth until you make an artificial fistula inside the mouth. The outside fistula will heal by granulation. If you extract the tooth before doing so, the tissue certainly will be greatly depressed, and an uglier scar result.

## Relief of Pain from Exposure of Pulp.

| | |
|---|---|
| Four per cent. solution of cocain . .... | 20 parts. |
| Pure oil of sassafras ..................... | 30 " |
| Melted carbolic acid ..................... | 50 " |

Shake the bottle before using, if the mixture is fresh.

## Amalgamating Gold Sections into the Cavities of Teeth.

Coincident with the introduction of the porcelain process of filling teeth with sections of porcelain, I also practiced the art of substituting gold and other metals in the place of porcelain on the grinding surface of the teeth. When the cavity is shallow and greater toughness is required, gold will be the most admissible. The process is essentially the same as with the porcelain. Platina foil is burnished or swaged into the cavity of the tooth to secure an impression, which forms a matrix or mold ; then, by fusion, gold or any other suitable metal may be run into the matrix to form a solid section or plug. When completed this corresponds to the lost portion of the tooth. The fusing of the metal may be done by means of the ordinary blowpipe. In the course of my experiments I have found that after the gold has been molded into a section, it is advantageous to grind off the major portion of the platina lining; this exposes the surface of gold and presents a condition more favorable to unite with the amalgam. The cavity is first lined with a thin coating of amalgam, then the section is coated with a small amount. When it is ready to insert, a slight malleting will drive the section to its proper adjustment and force out any surplus amalgam. Floss silk is used to tie the section in all proximal cavities and hold it while the amalgam is hardening. The section and the amalgam are then practically one compound plug. This method does away with the unsightly appearance of large blocks of amalgam, reduces the liability of shrinkage, secures the preserving qualities of the mercury as a germicide, and its ready adaptation.

To those who are advocating the use of copper amalgam this new method may be of special interest. I have found it thoroughly practical to adjust sections of gold into a great variety of cavities, and when completed it is difficult to discover they have been amalgamated in place. The use of the rubber dam is seldom required, and the long and tiresome malleting process is dispensed with.—Dr. C. H. Land, Detroit, Mich.

### Rubifoam.

The following recipe is taken from the *Western Druggist,* vol. 13, p. 394 :—

| | |
|---|---|
| Castile Soap, white | 9 dr. |
| Glycerine | 9 dr. |
| Syrup | 4 fl. oz. |
| Water | 26 fl. oz. |
| Alcohol | 26 fl. oz. |
| Tincture of Cardamon | ½ fl. oz. |
| Tincture of Canada Snakeroot (1 :16) | ½ fl. oz. |
| Oil of Peppermint | 45 m. |
| Oil of Wintergreen | 45 m. |
| Oil of Cloves | 12 m. |
| Oil of Cassia | 12 m. |

Ammoniacal solution of Carmine sufficient to color.

Mix the soap, glycerine, syrup and water; stir well and add the alcohol. Add the remainder of the ingredients, let stand a few days, and filter at a low temperature so that no soap will afterwards precipitate.

### Varnish for Lining Cavities.

Gum-mastich dissolved in chloroform makes a varnish which excludes all moisture and acts as a non-conductor.—J. C. Brewer.

### G. H. Weagant on a Useful Hint.

Occasionally we have a corundum wheel which will not fit a chuck —the hole being too large. An easy way to remedy this fault is to make a small band, larger than the size of the hole, place it over the end of the chuck and pour in some fusible alloy. Remove the band, place the chuck in the lathe, and with a chisel, turn down the alloy to fit the wheel.—*Dominion Dental Journal.*

## A BATCH OF HINTS.

R. D., in the *Dom. Dent. Jour.*, gives the following hints:

### TAKING A BITE.

Trim your wax, if for upper or lower set, to the contour and length. I once thought that sufficient, but now I get accuracy itself by taking two teeth, if plain teeth, or a couple of the blocks, if gum teeth, cutting away the wax exactly as it has finally to be cut away, to let in the teeth, and then simply set these samples to the exact length and prominence they are to remain.

### LINING TEETH.

In lining bicuspids and molars for gold plates, use heavier backing than for front teeth, as these teeth stand a greater strain. Also add a bit of plate—thus doubling the lining at the bottom next to the plate.

Before you extract for a set, take an impression of the natural teeth, and have it in your laboratory beside the substitute.

## NEAR PULP EXPOSURE.

When the pulp is only protected by a thin layer of dentine, cover with oxiphosphate to which creosote has been added, before the paste has begun to set, making it permanently antiseptic and preventing the deleterious effects of phosforic acid on the pulp when in close proximity.—F. E. HOWARD.

## CRANBERRIES IN CHOLERA.

Dr. Goriansky declares that the use of the pure and fresh juice of raw cranberries, given freely, either undiluted or with an equal part of water, is an excellent means of relieving the thirst and vomiting peculiar to cholera. In fifty cases in which ice and narcotics failed to make the slightest impression, the cranberry juice in small but repeated doses rapidly checked both vomiting and nausea.—*Exc.*

## MANIPULATION OF THE ZINC CEMENTS IN HOT WEATHER.

Fill a wide mouthed jar with broken ice, pour in ice water to fill the interstices, and force the ice against the surface of the glass.

The setting of cement can be perfectly controlled by the use of this cold-mixing base. In crown setting, place the crown on the same base while mixing the cement, keeping both at the same temperature. Use platinum pointed instruments, to which neither cement nor gutta percha will stick —H. G. REGISTER.

### FINISHING RUBBER PLATES

I use about one-third emory with my pumice for finishing plates, and finish with half the labor and time. I cover the palatal surface with oil or glycerin to remove the last traces of plaster.—G. C. COWLES.

### RELIEF OF PAIN FROM CONGESTION OF THE PULP

Wash the cavity with peroxide of hydrogen, and quickly dry it. Apply pure chloroform on cotton, then melted carbolic acid. In five or ten minutes the patient will be comfortable.—A. W. HARLAN.

### TO PREVENT DARK JOINTS IN VULCANITE WORK.

Grind gum sections to fit closely, and, just before removing from articulator, remove every other block, and touch the joints with a little oxiphosphate cement, mixed thin. Replace the blocks and wipe off all surplus cement.

### ARSENIC.

Before applying for the destruction of a pulp, anæsthetize the head of the latter by holding in contact a pellet of cotton, dipped in hot carbolic acid. Most dentists use too much arsenic. If the decomposed dentine is properly removed and the pulp fully exposed, a small pin's head size of arsenic is sufficient.

INSTEAD of paraffine which scales off as soon as wet, melt together rosin and wax on a spatula, and pour on cement filling after it has stood a few minutes. After a day or two it will take a polish almost like ivory.—E. T. DARBY.

### HYPERTROPHY OF PULP AND GUM TISSUE

These growths, which frequently fill large cavities in the molars, may be removed by repeated applications of 90 per cent. trichloracetic acid, wiping out the growth, a layer at a time, without hemorrhage or pain.—E. C. KIRK.

A TWO per cent. aqueous solution of trichloracetic acid to moisten the pumice is perfectly harmless. I have used it in my practice for some time, and find it far superior to tincture iodin for removing the "green stain" on children's teeth.—W. H. JONES.

### OXYPHOSPHATE AS AN ADHESIVE MEDIUM.

To secure adhesion between the walls of a cavity and any metal, we must use a cement; understanding the most desirable qualities for that to possess, we mix some one of the good oxyphosphate cements, which is always at hand. The amount of cement to be left in the cavity is usually small; so that it is seldom necessary to carry but a small amount to the most accessible wall of the cavity, where it is scraped off of the instrument at the margin of the cavity. No particular attempt is at this time made to spread it over the walls of the cavity as it will not always be an easy thing to do and much valuable time will be lost. Enough amalgam to make a thin layer all over the walls of the cavity, and of the right consistency to permit its being readily and perfectly adapted to the same is then placed in the cement and quickly carried, forcing the cement and air ahead of it, all over the walls of the cavity until they are completely covered. Press home with as much force as the case will admit of.

To insure a perfect metal contact of the filling at all margins, no matter how remote they may be, it is simply necessary to carry a properly shaped excavator around these margins, and remove both the metal and cement at the enamel edge of the cavity.

This layer of amalgam so adapted will remain where first placed, and the remainder of the filling may be built up after any method which is indicated.—J. C. ST. JUST, D.D.S., in *Dental Review.*

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[SECOND PAPER.]

# THE CONSTRUCTION OF ARTIFICIAL TEETH.

By Theodore F. Chupein, D. D. S., Philadelphia, Pa.

We continue the subject of Impressions. Should the edentulous mouth or gums present a flabby appearance with the ridge flacid and weak, and the whole surface showing a soft condition ; or should the gums be hard and soft at different points, it would be useless to look for any adhesion should the impressions of such a mouth be taken in plaster of Paris. Such a condition requires that the impression be taken with a material which would bring pressure on these soft flacid parts. Nevertheless we should, as a preliminary step, take a plaster impression and into this impression lay a layer of modelling compound, such as was described in the last paper and with this take a second impression. From this impression make the model and on the model a fusible alloy plate as has been described.

To satisfy our readers that a plaster impression is not indicated in such mouths as has been instanced, we will relate what Dr. W. H. Trueman went to considerable trouble to obtain the impression of a mouth with one of these flacid weak ridges, by first swaging a plate to fit over the posterior part of the mouth where the gums were a trifle more rigid than in front, and then with an impression tray filled with plaster almost as fluid as water he hoped to preserve the condition of the mouth just as it existed. When a vulcanite plate was made from this impression, on the model obtained therefrom, *there was no more adhesion of the plate than if it had been made for some other mouth*, while with an impression taken, which forced these flacid parts away and held them thus, just as the plate would hold them, the adhesion was firm. It may be set down then as a certainty that soft mouths, or mouths having hard and soft places should not have the impressions of them taken with plaster of Paris. We do not use modelling compound as an impression material except in the way we have indicated, yet we are forced to admit that it is a reliable material, in some hands, for this purpose, and that a clear sharp impression of the mouth can be obtained with it, especially in edentulous mouths. The material is softened in very hot water and should be uniformly soft throughout, and the impression cup heated so that the material may adhere to it. The cup is filled with it to the level with the rims, and all excess of material cut away with scissors, and just before introducing it into the mouth it should be passed over the flame of the spirit lamp. This glazes or softens the surface rendering the surface uniform and better adapted, by this treatment, to copy the fine lines of the gum surface. On pressing it up against the gum the same rule is observed as with plaster: namely, the back part of the mouth is pressed on first when the cup is afterwards brought up against the ridge. It is held *immovably* with the fingers of the left hand while the material is pressed over the alveolar ridge with the fingers of the right hand. It should be held thus steadily, until the material hardens sufficiently *to refuse to receive any mark from the finger nail.* We consider that there is more skill requisite in taking an impression with modelling compound than with plaster and it is to overcome this lack of skill, or knack of taking a perfect impression with modelling compound, that we have suggested the plan of combining modelling compound and plaster of Paris. The hardening of a modelling compound impression may be hastened by squirting iced water, from the dental syringe, against the impression cup, or by throwing a jet of Chloride of Ethel against it. On removing it from the mouth it should be immediately chilled to prevent any change of form, especially if the roof of the mouth is high.

We think modelling compound an excellent material for obtaining the impression of an edentulous lower jaw, as the heavy flow of saliva settling there frequently obliterates the fine lines, with plaster impressions, while it is often very difficult to get the plaster well down on the ridge next the root of the tongue. Impression cups, it is true, have been designed to take these parts, but even with such cups it is often difficult to obtain an accurate impression of these parts with plaster.

## PARTIAL IMPRESSIONS.

For taking partial impressions we rely on plaster of Paris, as with modelling compound the presence of teeth, especially if these be narrow at their necks or lean towards each other, will cause this material to drag or bend out of shape, thereby making the impression unreliable. In cases such as these, which may be classified as difficult impressions we proceed as follows : Fig. 4 represents such a case.

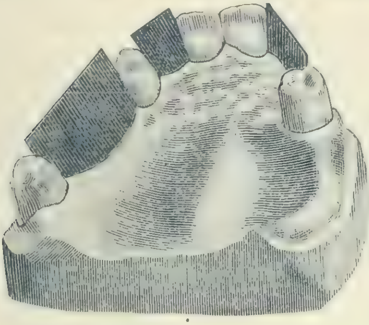

Fig. 4.

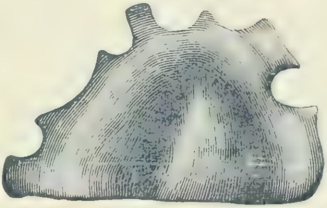

Fig. 5.

We take a piece of brass or German silver plate and fit pieces between the spaces where the plaster is likely to fracture. We make these pieces about one-eighth of an inch higher than the cutting edges of the teeth in the mouth as shown by the illustration. We next proceed to wipe the teeth dry with bibulous paper, and when dried we apply to the dried teeth some adhesive wax, made almost fluid with heat. This adheres firmly to the teeth and by warming the pieces of metal which we had previously fitted, they are held firmly in the interspaces. The mouth being thus manipulated, the batter of plaster of Paris is prepared and placed into the impression cup, which had previously been selected as to its proper adaptability to the case in hand, and carried to the mouth, where it is steadily held until the plaster hardens. Should it fracture in the effort to remove it from the mouth, the fracture will be of such a nature, that the parts may be easily and accurately replaced in the impression cup : for, as the pieces of metal were made only a trifle higher than the cutting edges of the teeth, these being the weakest points of the plaster impression, the lines of fracture will be in these localities and therefore will not, in the least, interfere with the perfection or integrity of the impression.

The impression is varnished with Shellac varnish. When the varnish has dried hard, the impression is either greased with a slight film of oil, or with Etherial solution of soaps and pins, with the heads cut off, stuck into each tooth depression. The model is then made and when hard the impression is cut away from it.

A fine saw may now be used on the plaster teeth of the model until it strikes the pins. This weakens the plaster teeth, and they may be then broken off from the model and put away carefully as well as the pins which passed through them. A wax base plate is now formed over the surface of the model, where the plate is to rest, and a fusible alloy plate made in the same way as was described in the last paper. Fig 5 shows a plate made from the model. This being done it is tried into the mouth. If it adhere firmly, we may then proceed with the work to completion. The plaster teeth which were broken away from the model may be replaced in their exact places, by means of the pins which passed through them, and the saw marks filled in, either with plaster of Paris, or strong hard adhesive wax.

But suppose the plate should not adhere, what then? In cases such as is illustrated by Fig 4 the lack of adhesion may be caused by the plate riding or pivoting on the hard lump in the roof of the mouth, (see illustration Fig 4.) By scraping the plate at this point so as to relieve this pressure perfect adhesion *may* be secured. If it should not, we proceed as follows: We lay smoothly over the interior of the fusible alloy plate a piece of yellow bees' wax, such as is used for base plates; this being of uniform thickness, warming the plate slightly so as to cause the wax to adhere to the plate. We then place this in a bowl of warm water, *not hotter than 110 degrees F.* This softens the wax uniformly without endangering the melting of the plate,—as the plate would melt in boiling water, and it would not be safe to subject it to a greater degree of heat than 110 degrees. The wax on the plate being softened it is conveyed to the mouth and there forcibly and steadily pressed against the gum, the surplus wax oozing over the edges of the plate and also against the teeth. Plaster of Paris may now be placed in an impression cup and a new impression taken with this plate in position; or modelling compound may be softened and the impression taken with this over the fusible alloy plate. Treated in this way we have been successful when all other means known to us have failed to secure an accurate fit and firm adhesion, and we will have the satisfaction of knowing that we have done all that could be done to accomplish the desired result.

[TO BE CONTINUED.]

## IRREGULARITY OF THE TEETH.

(A CORRECTION.)

In an article published in this Journal for September, 1894, we made use of certain illustrations, ideas and processes which we have lately found (though ignorant of the facts at the time) should have been credited to Prof. S. H. Guilford. We take this opportunity to make the "amende" which we cheerfully do.—THEODORE F. CHUPEIN.

## THE DAVIS ANGULAR HAND-PIECE.

By THEODORE F. CHUPEIN.

We have been using this instrument from the time it was first put on the market, and we can conscientiously recommend it to our brother dentists. The more we use it the better we like it. It reaches places where the direct hand-piece will not touch, and after nine months' use shows no appreciable wear. We find it invaluable in the cleansing of roots for treatment, particularly the buccal roots of upper molars and bicuspids and the anterior roots of lower molars as well as the roots of lower bicuspids.

## THE BEST MANDREL FOR SAND PAPER DISKS.

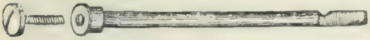

FIG. I.

Unquestionably the best Mandrel for Sand Paper Disks is the "Huey" Mandrel. If these are made with a long screw entering the shank, say ¼ of an inch, and a small rubber washer is placed beneath the screw-head, nothing better can be desired. The disks are held firmly and will not be torn, as they are invariably by mandrels which have points that are forced through the paper. They may be changed as expeditiously as any other device for this purpose, by simply reversing the engine which releases the screw-head, when a new disk can be placed on it. There is no breaking of the thumb nail in trying to take off the head, to say nothing of the time lost in doing this. The cost of the Huey Mandrel is 25 cents, while all of these devices range from 60 to 75 cents each. Dentists will therefore find it to their advantage, in every way, to give up the effort to find what inventors claim to be "just the thing," and settle down to the simplest and best device for this purpose.

## ILLINOIS STATE DENTAL SOCIETY.

The thirty-second annual meeting of the Illinois State Dental Society will be held in the Senate Chamber, Springfield, Ill., May 12 to 15, 1896. The Executive Committee has been especially fortunate in preparing a very interesting program. No member can afford to be absent. Dentists practicing in the State are cordially invited to attend, and if possible to become members of the Society. The profession outside of the State are always welcome to these meetings. The

usual reductions has been obtained from the hotels and railroads. Pay full fare in coming and take receipt therefore, this when countersigned by the Secretary entitles the holder to return at one-third the usual fare.
Louis Ottofy, Secretary.
Masonic Temple, Chicago.

## "GOLDEN ANNIVERSARY."

We hope to be able shortly to publish in full an account of this celebration, held on the 16th of December, 1895, at the Continental Hotel, in this city, which has been from various unavoidable causes delayed. Matters of historic value were presented which we propose to place on record so that they may be conveniently available for future use.—Ed.

## SELECTED ARTICLES.

## ANCIENT AND MODERN HYPNOTISM.

BY W. C. ACHARD, GLOUCESTER, N. J.

Read at the regular meeting of the Truman Dental Society, April 4, 1895.

I will endeavor to give a brief history of hypnotism, a description of the peculiar phenomena accompanying it, and a few words regarding its application in dentistry :

Hypnotism, of which the student of medicine has heard a great deal during the last few years, is by no means the new theory that many consider it; in fact, it is the very oldest method of curing diseases.

There is a sect in Egypt which has practiced it for over 4,000 years. Later on we have the Mumo Jumbomen of Africa, the medicimen of the American Indian, the "charmers" of India, the Roman sibyls and Greek oracles. Of the last named we have, foremost, the oracle of Delphi, where in Apollo's temple a priestess sat for hours on a three-legged stool over a chasm in the ground, from which rose vapors of sulphur. In due time she entered the somnambulistic state, and prophesied to the awed listeners. Among the Israelites we have the well-known story of the "Witch of Endor." But for all followers of this most wonderful art, the fakirs in India surpass in skill all European hypnotizers. It is there where the greatest cures of diseases are effected, although accompanied with much unnecessary mummery.

In the middle ages there were the witches, which, in most cases, were poor unfortunates who had more than ordinary power of "animal magnetism," (as Mesmer called hypnotism). Then came, in 1662, Greatrakes, an Irishman, and a distinguished soldier, who had a revelation in a dream that he could cure scrofula by the laying on of hands.* He accomplished some remarkable cures, and was followed, in 1773, by Gassner, an ex-monk of Suabia who travelled through southern Europe, using Latin pharses in hypnotizing his patients. But it remained for Mesmer to demonstrate the existence of " animal magnetism " in the human body.

Friedrich Anton Mesmer was born in 1734. After studying medicine in Vienna, he began his researches in ''animal magnetism'' the result of which I will give in his own words. He says: "Through certain manipulations, such as touching, stroking—in a word—magnetizing, even simply by merely a strong act of the will, one can produce this power in persons, impart it to others, and cause the most marvelous and wholesome effects." But he was considered a juggler by medical men, and expelled from Vienna, in 1774, for he alleged cure of a blind girl, (the case of Marie Paradise). He moved to Paris, and opened there his famous parlors. As it may interest you, I will describe his method for the treatment of all diseases: In the operating room there was, in the middle of the floor, a round tub, with a diameter of five feet, which was provided with a lid. On the bottom of it bottles were placed in such a way that the necks of some pointed to the centre, and of others to the periphery. The tub was then filled with water to cover the bottles, and bent iron bars protruded through the lid. The walls were covered with mirrors, which, according to Mesmer's idea, heightened the effect of hypnosis. The patients were seated around the tub closely, and touching each other's knees, each holding one of the iron bars protruding through the lid, and also each other's hands. They were then connected by a cord, which was tied around their waists to assist in the passing of the " magnetic fluid." A mystic twilight pervaded the room, and the ear was charmed by sweet music of the harp and piano, and also the soft melodies issuing from a harmonium, which Mesmer played with a master hand. After some time, the men and women sitting around the tub began to have peculiar sensations, as nervous twitchings, etc., and it was then that Mesmer entered solemnly, dressed in a fantastic robe of embroidered silk, holding in his hand an iron rod, with which he majestically walked around, stroking the patients. Some terrible crisis then ensued, the patients became hysterical, some having terrible convulsions. The most afflicted were then placed in a room, the floor and walls of which were padded.

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* Edward, the Confessor, King of England, in the year 1064 or 1065 was the first to cure King's Evil or Scrofula by the laying of hands on the afflicted person. —Ed.

It must be admitted that Mesmer really achieved some remarkable cures, which were discussed by the whole scientific world, and which led to the celebrated French Commission, appointed in 1784, by the government, to inquire into the nature of the new phenomena. This learned body of scientists included Franklin and Lavoisier, and the result of the investigation may be seen in the last words of this report: "Magnetism is one more fact in the history of human errors, and a great proof of the power of imagination." It may be stated incidentally, that Mesmer closed his parlors to the commission, and they obtained their results from the parlors of one of his friends, Dr. Chas. D'Eslon. Mesmer then retired, and left France at the outbreak of the French Revolution, and died in England, in 1815.

Since then, hypnotism or mesmerism, as it was called, has become an established fact. Prof. Charcot, the famous neurologist, of La Salpetriere, in Paris, commenced, in 1878, his investigations of the effect of hypnotism on hysterics, and demonstrated its different stages.

Another school is in Nancy, with Bernheim and Liebault at the head, and since July, 1886, there has been published a monthly journal, La Revue de L'Hypnotisme, with such contributors as Dr. E. Berillon, (the editor), Charcot, Luys, Voisin, Hack-Tuke, and others.

Hypnotism or mesmerism, of which somnambulism is the third stage, is that condition in which the will, self consciousness, and sensations of the patient, are partially or entirely under the control of the operator, the subject losing, in most cases, all remembrance of what has passed during the hypnosis, but in which the subject, when hypnotized again, recovers the memory of the first hypnosis.

We will now consider the methods of producing hypnosis, which are as varied as the results. The ancient Egyptian sect, which I have mentioned, drew in the centre of a white plate two triangles intersecting each other, and filled the figures with cabalistic words and signs. They then poured oil over the plate to make it shine more. After staring at the centre of the plate for a few minutes, they entered the somnambulistic state. In Constantine, the members of the tribe of Beni-Aiaoussa sit down in a circle. After some time they begin peculiar swaying movements, until at last, they spring up, their bodies dripping with perspiration, when with foaming mouths and in convulsions, they are absolutely insensible to pain, performing such feats as piercing their flesh with daggers, walking on hot irons, etc.

In Turkey, and Africa, there are to-day men who hypnotise themselves by staring intently upon their own umbilicus and pressing their tongue to the palate. After they are thoroughly under the hypnotic influence, they are put into an air-tight sack, which is sealed, then into a vault, which is also sealed and covered with earth, upon which grass is sowed. When the whole mound is covered with grass, the vault and sack are opened, and the man de-hypnotized, which is done by forcing open his mouth, pulling out his tongue, (which has settled into the pharynx), and then producing artificial respiration. Even after thus having been buried alive for months, the individual is said to be none the worse for his experience.

Other methods of producing hypnosis are to let the patient stare at a highly polished metal cap, or at a crystal, or any small object held at a distance of two or three centimeters before the eyes. A very good method, however, and one used by many operators, is Gessman's, which he describes as follows in his book, "Magnetismus and Hypnotismus": "I sit down opposite the patient, make her close her eyes, take her hands in mine, so that the four thumbs are pressed against each other, tell her to be quiet, and to yield unresistingly to the first inclination to sleep. When she has fallen asleep—generally within ten or twenty minutes—I increase the sleep by some strokings over her head and chest, and try to induce her to talk. This I easily achieve by placing one hand on her head and taking one of her hands in my other hand, while I, speaking towards the pit of her stomach, ask, 'Do you hear me?' which question must often be repeated four or five times before I receive a very weak answer." Now is the time for further experiments. Gessman uses a preliminary test to ascertain whether or not the patient is susceptible to hypnotism. This he does by telling her that in his organization there is a strong evolution of electricity, which enables him to electrize persons. He lets her seize with both hands two fingers on his right hand, and after some time asks if she feels anything. If she is susceptible, she feels a peculiar crawling sensation at first, and then a numbness in the upper part of the body. Then he says in commanding tone, "Hold my hand tight—tighter—tighter still—well! Now you cannot let go my hand;" and really she cannot. Blowing on the hands and telling her that she is free ends the spasm.

Thus could be enumerated many different methods; in fact, every operator has his own. Persons of a weak will are usually more susceptible than others. Take a child for example: When you, as a stranger, look at it fiercely and tell it "do this," it will do it, for it recognizes the superior will unconsciously, and that is only a mild form of hypnotic suggestion.

The methods of de-hypnotizing vary also very much. You may use the same methods employed to revive a patient who has fainted. The simplest method is to blow on the forehead. Some persons are de-hypnotized by the simple command, "Awake!" Or, if you tell them that they shall count from one to ten, and awake when they say five, they will do so, and then keep on counting (not knowing why), or else let the word six die out on their lips.

The many phenomena of hypnotism have been divided into separate stages and classes by different authors. We will only consider Charcot's classification. He accepts the following three stages: First, the cataleptic; second, the lethargic, and third, the somnambulistic; which are described extensively by Dr. Paul Richter, a pupil of Charcot. * The cataleptic state is produced by staring at some object, by a sudden strong light placed under the eyes, the sound of a gong, or a tremendous peal of thunder, also by sudden emotions, as fear, wrath, etc., when a person is for a shorter or longer time deprived of the power of speech or mobility. It also develops from the lethargic state when the already closed eyes are suddenly exposed to strong rays of light by the raising of the lids. It sometimes occurs before the narcotic state, during the administration of anæsthetics. A person who has been hypnotized is often very easily put in the cataleptic state by the clapping of the hands, the report of a gun, the sound of a gong, etc. An amusing incident illustrating this may be told here:

A woman had been suspected of stealing photographs from La Salpetriere, at Paris, but upon being questioned, she absolutely denied it. One day she was surprised, standing motionless at the place where the photographs were kept, with one hand stretched out grasping one. It seems that a gong was sounded in the next room to

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* *Cataleptic state*—A spasmodic condition marked by a suspension of consciousness, accompanied with rigidity of the muscles but with no alteration of the circulation of the blood.

hypnotize a person there, and this woman almost immediately fell into the cataleptic state, which led to her discovery.

The characteristic of this state is immobility. The eyes are open and staring; respiration almost ceases; the limbs retain the most difficult positions in which they are placed; the skin is insensible to the strongest irritation, but the muscular senses, and those of hearing and vision partly retain their activity, and are susceptible to suggestion. Catalepsy ceases by a return to the normal condition, or by changing into the lethargic state. This state is produced by staring, or by continual pressure on the eyeballs. It can be produced from the cataleptic state by a simple closing of the eyelids. It is often preceded by epileptic phenomena, such as foaming mouth, asthmatic respiration of tetanus. The principal characteristics are complete insensibility of skin and mucous membrane, irritability of motor nerves and often insensibility to suggestion. Respiration is deep and quickened; limbs and body are perfectly relaxed. The muscles contract by stroking their tendon, and can also be excited directly. By opening the eyes the cataleptic state is reproduced.

The somnambulistic state is produced from the lethargic by a pressure or friction on the cranium. It is the one generally produced by magnetizers, and is characterized by absolute insensibility of the skin and mucous membrane. The senses are also sharpened, and the subject feels a certain personality, an ego, which may be illustrated by the following example: Before a patient in the cataleptic state are the requisits for shaving. They are touched by the operator and the patient at once begins to shave himself, but on being pressed on the cranium he stops and asks, "Why am I shaving myself? I certainly do not need it!" On raising his eyelids he will go back to the cataleptic state and resume his shaving, but care must be taken that he does not cut himself, as he is absolutely insensible to pain. This state is produced by all methods which act on the imagination, and is especially susceptible to suggestion, which susceptibility is almost limitless, the actions of the somnambuld often bordering on the marvelous.

Among the physical effects of hypnotism we may name the muscular sensitiveness in different stages, varying from the flexibitis cerea in the cataleptic state, to the spasm and tetanus following it. Indeed, the rigidity of the muscles is at times so great that magnetizers produce the cruel experiment of suspending a person in that condition between two chairs, in such a way that the body rests only on the extremes of the head and feet; and to show this power over the subject, the magnetizer sits with his whole weight on the thus suspended body. This experiment is the more dangerous, as it may produce tetanus of the respiratory muscles. Analgesia, or entire insensibility to pain, seems to be a characteristic of all stages of hypnotism; with a few exceptions, in the somnambulistic state, where it is not only absent, but where the sensibility to pain is often very much increased. In this hyperæsthesia may be found an explanation why the somnambulist may recognize things with his eyes closed, or walk in the most dangerous places with absolute safety. The slightest touch with a hair is accurately localized by him.

In the cataleptic state, the sense of sight, hearing, smell, and taste, may be affected by suggestion, and very amusing experiments are made; as for example, one may give the person a green persimmon to eat, and tell her that it is a good apple, upon which she will enjoy it very much. Or on the other hand she may be given a good apple and told that she is eating a green persimmon, when she will immediately make a wry face and eject from the mouth what is still in it

Among the mental effects, we have in the first place that on memory. It is a characteristic that the deeply hypnotized person upon awakening remembers nothing of what has passed during the hypnosis, which, however, can be controlled by the operator.

If, for instance, you tell your patient that you will remember everything that has passed upon awakening, he will do so. Very peculiar hallucination may be thus brought about. We will take an experiment made at Nancy, for illustration. Mrs. A. is hypnotized by staring. While asleep she is made to believe that three minutes after awaking she will go and embrace a little peasant woman who is sitting in the corner of the room, and whom she then sees for the first time. At the moment predicted she goes and embraces the woman, who is quite astonished at this unexpected caress. When a moment afterwards she was asked, "What did you do?" she answered, "I? Nothing!" "Yes, you embraced that woman!" "No, certainly not!" She had already forgotten what she had done. From this it may be seen, that commands given during hypnosis will afterwards be carried out unconsciously, and this has led to many serious cases of criminal actions. We all remember the historic trial in Paris a few years ago, when a woman murdered a man in obedience to a command given her while under the hypnotic influence. And this brings us to the dangers and abuses of hypnotism.

I will only cite a few cases to show that the hypnotized can be injured by hypnotism, and that he can be used against or without his will as a tool for the service of crime. The sleep produced by hypnotism is not a normal one, but a nervous pathological state, and as all abnormal conditions of the body must injure it in time, it is obvious that repeated experiments on a sound and healthy patient are more or less injurious, and have a tendency to weaken not only the mind, but the body. It may produce such a susceptibility that a subject will be brought immediately under the hypnotic influence by the slightest cause. There is a case on record in which a man became hypnotized on the street by a light from a carriage coming toward him, and he at once became cataleptic. Should that man walk on a railroad track and see the headlight of a locomotive, it may have the same effect on him, and he would lose his life.

The following is an experiment by Liegeois to prove that a person can be used for a crime against his own will: A young man, 25 years old, while under hypnotic influence, was presented by Liegeois with a white powder, and told that it contained arsenic. "You will immediately go to your aunt; there you will take a glass of water, pour the arsenic into it, dissolve it well in water, and offer the poisoned drink to your aunt!" In the evening Liegeois was informed that the attempt at poisoning had been punctually performed. Thus we could enumerate many cases to show not only the good, but also the evils and abuses of this wonderful art.

How can we apply it in medicine and dentistry? In medicine it has been used with great success all over the world. Insomnia, rheumatism, hysteria, etc., have been treated with its aid, and even amputations have been performed with absolute absence of pain. It may prove interesting to read Dr. James Esdaile's book on "Mesmerism in India,"' (London, 1846), in which, among other things, may be found a report of the medical and surgical cases treated by him with the aid of hypnotism.

In dentistry it has been used with more or less success. Many have been discouraged after the first few trials, but those who have carefully and with untiring efforts sought the benefits obtained by its use, have been rewarded with greater success than they ever hoped for. We all have had patients whose fear and nervous excitement was so great that it was difficult even to make a proper examination of their teeth. Just there hypnotic suggestion may prove the greatest benefit. We can easily produce the first stage, and suggest quiet, absence of fear, and willingness to undergo any dental operation. This will aid the operator and patient very much, and hypnosis may be produced again after the operation, to suggest the same after the patient leaves the chair. An inexperienced operator may simply suggest a tranquil frame of mind for the time being and bad results may follow it. It is, therefore, essential to suggest that the patient shall feel absolute quiet and calm after the hypnosis, and shall not experience troublesome consequences. Too much stress cannot be laid on this; as the omission may bring on extreme nervousness, headache and disturbed sleep. The question now arises: Can hypnotic suggestion be used successfully to produce anaglesia during such minor dental operations as excavating cavities, extracting pulps, etc.? Dr. Thomas Fillebrown, of Boston, in his paper on "Hypnotic Suggestions as an Obtundent and Sedative," read at the World's Columbian Dental Congress, August 18, 1893, asserts that it can. For this purpose he indicates the first and second degree of the Nancy School, and by constant repetition of "Sleep, sleep, you are resting, you are not suffering, you are not dreading it, you do not care for it, sleep, sleep," etc., he maintains the hypnotic sleep, which otherwise might discontinue as soon as pain is produced. One especially good feature of employing hypnotism for obtunding sensitive dentine, is that the lightly hypnotized patient in most cases shrinks from pain, though he may not feel it, and thus we have a guide to avoid the pulp, which we have not in any other method of allaying pain.

Dr. Gomer Sandberg, of Stockholm, issued in May, 1893, a pamphlet, Quelques, mots sur L'Hypnotisme, Stockholme, 1893, in which he describes the use of hypnotism for obtunding sensitive dentine in a case he had on the 20th of December, 1889. A lady came to him to have two teeth filled, but the extreme sensibility of the dentine did not permit even the touch of an excavator. He hypnotized the lady, and then suggested no agitation during the operation, quiet and insensibility of the teeth. The last words he repeated many times. He then commenced his work, which lasted one hour and a half, and during which she was perfectly quiet, not experiencing any pain whatever.

In conclusion I will say that the practice of hypnotism requires a great deal of care and experience, and that the hypnotizer should have a good medical knowledge, which it may be said, the modern course in dentistry strives to impart to its student. Its study is not only interesting and instructive, but it is an art with which the good student of medicine and its various branches should make himself acquainted. With a firm will and a determination to surmount all obstacles, the conscientious student of hypnotism, will pry into its mysteries, and, awed with wonder, exclaim with Shakespeare:

> "There are more things in heaven and earth
> Than are dreamt of in your philosophy!"

—*Microcosm.*

## COCAINE.

BY J. L NEWBORN, D. D. S , MEMPHIS, TENN.

"Certainly," says the able editor of the *Cosmos*, "the ghastly record of fatalities consequent upon the use of cocaine preparations is long enough to demand a halt, and that the use of this drug be placed on a clearly defined legal basis."

In two papers published by Dr. Mattison, Medical Director of the Brooklyn Home for Habitues, on cocaine poisoning, covering a period from May 23, 1887, to March, 1891, he cites thirteen deaths and nearly two hundred less lethal cases. In another paper, covering a later period, increasing the fatal record, he describes two cases: strong men, stricture; twenty mimims of four per cent. solution of cocaine thrown into the urethra—not hypodermically—produced violent convulsions and in spite of all efforts, death in four minutes. A young woman in the hands of a complexion artist suffered great pain from the application of a strong solution of carbolic acid to the affected part. To relieve this a four per cent. solution of cocaine was freely applied—not hypodermically. In a few minutes she became excited, said she felt strange, walked to the window and fell dead.

He emphasizes the need of great care in all cases of cocaine anæsthesia by the following pertinent conclusions:

1. Cocaine may be toxic.
2. This effect is not rare.
3. There is a lethal dose of cocaine.
4. This dose is uncertain.
5. Dangerous and deadly results may follow doses usually deemed safe.

6. Toxic effects may be the sequence of doses large or small, in patients young or old, the feeble or the strong.

7. The danger is greatest when given under the skin.

8. Cardiac or renal weakness increases the risk.

9. Purity of drug will not exempt from ill result.

10. Caution is needful under all conditions.

11. Reclu's method, Corning's device, or Esmarch's bandage should be used when injecting.

12. Nitrate of ampl. hypodermic morphia, hypdermic ether, alcohol, ammonia, and caffein should be at command.

History has repeated itself along lethal* lines as regards cocaine so often, says the doctor, that it really seems surprising that any one at this day should question its powers for harm. It may not be known to all that cocaine has killed in a smaller dose than morphine, but that is a fact. It may not be known to all that cocaine has killed in a shorter time than morphine, but that too is a fact. "If, then, we have such a narrow margin of safety in the use of cocaine, in accurately known doses, the use of a nostrum containing cocaine, in which the existence of the drug is either denied or is of unknown amount, becomes little short of criminality." In spite of this grewsome record, which is but a fractional per cent. of all its untold, therefore unknown temporary and permanent injurious and often fatal, after affects, yet "fools rush in where angels fear to thread."

I suppose that every State and territory and county and important town from Puget Sound to the Florida Keys, and from Wool as took to the Rio Grande, has been canvassed by the nostrum vender, selling to dentists the exclusive rights to use these dangerous cocaine compounds. Our offices are periodically flooded with fancy-colored leaflets offering to give us a half-dozen bottles of their secret "hell-fired" stuff if we will send on three dollars for the best hypodermic syringe ever made, and two or three extra needles thrown in. Some of these seductive offers come from men claiming to be dentists. For references they often inclose pages of flaming certificates from men with "D.D.S." to their names. Often there are those with an easy conscience who have never learned to say no, but greedy of gain, and eager to double or quadruple their practice, with no proper knowledge of dentistry, ignorant of the most elementary features of the action of cocaine, therefore easy victims of the patent nostrum vender. These do not recognize the danger signals exhibited by distressed nature in the pallid cheek, the clammy brow, the labored breathing, and the wild, anxious stare. With a judicious admixture of "cheek," "gab," red rubber, and a hypodermic syringe loaded with something, they know not what, the ignorant public becomes an easy prey, upon whom is entailed, by a wholesale mutilation of the young and old, the loss of useful organs that should have been preserved through life, and a worthless substitute, as a personal souvenir of their stupendous folly.—*Microcosm.*

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*Lethal—Deadly—Pertaining to the production of death.

## A NEW ANÆSTHETIC.

An important communication is made by Prof. Theophilus Parvin before the members of the County Medical Society in relation to a new method of painless operations. The Professer had witnessed last summer, in Europe, surgical operations of a grave nature, performed under the use of a weak solution of cocaine and morphine injected around the point of operation.

Dr. Schleich is the man who first experimented with the particular method described, and has performed many serious operations, such as amputation of limbs, removal of tumors and abdominal incisions without causing pain, though the person operated on remains conscious all through the proceedings.

The *modus operandi* is as follows: The part is well cleaned according to the usual methods, then the surface of the skin is rendered insensible to the pain of a needle by a spray of ethyl chloride, and with a hypodermic syringe a number of injections are made in the deeper structures of a solution consisting of 2 parts of common salt, 1000 parts of water, $\frac{1}{4}$ of a part of morphia muriate and 1 part of cocaine.

The tissues are thus infiltrated with the solution, and they become insensible to pain, this insensibility lasting 15 minutes or more.

Professor Parvin believed that at least 50 per cent. of the operations now performed under ether or chloroform could be carried out with the use of this local anæsthetic, which is comparatively harmless and with no bad after effects.

To demonstrate the method of application, and at the same time prove the truth to his assertions, Professor Parvin proceeded to bare his arm, and astonished the audience by stating that he proposed to have an incision an inch long made into his own flesh and stitched up. An assistant, accordingly applied the anæsthetic to the Professor's arm, and with a scalpel, cut the flesh without causing the least change of expression in his face, and then stitched the wound.

The paper was discussed by prominent surgeons present, some of whom had tried the method and found it as described. General anæsthesia, however, they believed, would still be necessary in the great majority of operations, since unconsciousness was desirable for other reasons than the mere one of producing insensibility to pain. Patients are often terrified by the sight of the operation or the thought of it. Accidents, too, might prolong the time of operation, or unforseen complications might arise which would require deeper incisions, passing beyond the field of insensibility.

It was the opinion of some that the anæsthesia was the result of pressure on the nerve endings by the fluid introduced, and therefore mechanical in its nature.

Cocaine has long been known as a powerful local anæsthetic, but poisoning from its use has been reported, and therefore it is not without danger.

Though the surgeons present expressed themselves willing to give the method a trial, they were not so sanguine as Professor Parvin, who, in closing the discussion, reiterated the statement he made in his paper, that it would not be long before the bulk of surgical operations, now performed under ether, would be carried on by the use of local anæsthesia.

## ON SUCTION CHAMBERS.

Are suction chambers in plates for edentulous uppers advantageous or not? It is almost impossible to dogmatically answer the question, though it merits consideration. The pressure of the atmosphere being, roughly speaking, fifteen pounds to the square inch, and the size of a plate being hardly ever less than four square inches, and generally more, if perfect suction were obtainable such a plate should be able to withstand a displacing force equal to sixty-pounds. At first glance it would seem that nothing like this amount of force is ever applied to such a denture, and, doubtless no such amount of direct downward pull ever is. But from the extraordinary force which the muscles moving the jaws have been shown (notably by the late Dr. Patrick) to be capable of exerting, it is certain that the force of the side to side movement, during the grinding of food, must be very large. Such power being applied usually to one side only at a time, and to the grinding services of the teeth, therefore at a distance from the gum margin of that side, which forms a fulcrum, we have to do with a lever of the first order, in which the weight is represented by the opposite side of the plate. Hence, the tendency whilst grinding food on one side is to displace downwards the other side of the plate, and this with some considerable force; but, because in levers of this kind the effect of the force applied is directly proportionate to the length of the arm on which it acts, the amount of this force would be variable, and depends directly on the length of the upper teeth. The weight of the denture is as nothing compared with this displacing force, yet in suitable cases, by paying attention to a number of details which need not be mentioned now, and by getting as perfect suction as possible, these levers are counterbalanced, and the denture is kept steadily in place. But this suction is only "as perfect as possible." It can never be anything like fifteen pounds to the square inch, and for the following reasons: First, for perfect suction we must have perfect fit. Will anyone contend that the fit we obtain is at best any more than relatively perfect? Secondly, the base to which it is fitted must be a fixed and not a changing base. Thirdly, the exhausting agent must be sufficiently powerful to remove all the air. This we do not believe the tongue can do. On account of the imperfection of our mechanism, more marked in one case than in another, various devices are adopted with the idea of increasing the power of suction. Amongst these are chambers with or without discs. To take first a chamber alone—how can this act? Will it increase the power of the exhausting agent? On the contrary, it will, by giving increased air space, increase the work required to be done. Nor can it effect the base, otherwise than by causing a hypertrophy of the mucous membrane, because its sharp edges act as an irritant, and because pressure over the neighboring part would necessarily cause the blood to run more freely to the piece not pressed on. These theoretical considerations lead us to the conclusion that such chambers do not directly increase the amount of suction. It is, however, alleged that, though they may not do so directly, they assist by lifting the plate away from the hard central portion of the palate and allow it to press more closely home at the margins. This must obviously depend upon the firmness of the margins. In some edentulous mouths the margins are at least as hard as the centre of the palate, and if stumps be present more so. Certainly if this be the object of the chamber it should be of an entirely different shape to that which it usually is, and depend not on the artistic ideas of the maker but on the shape of the hard surface off which it is supposed to lift the plate. To our mind there is far more to be said in favor of a chamber fitted with a disc. Here we have a soft elastic structure, which will readily adapt itself to the surface of the mouth, and so over this area at least we are likely to get perfect suction. But, leaving out of count the fact that this disc generally soon swells up, becoming too large for the chamber, and otherwise worn out, since this would at best be an indication for its constant renewal, there are the further disadvantages that such a disc, though giving fixity at one spot, would not give immobility to the piece at large; and, moreover the strain and irritation of that particular piece of mucous membrane over which the disc lies is likely to cause a chronic inflammatory process of an undesirable nature. Hence we are of opinion that the use of suction chambers and discs, though time-honored, is one, the advantages of which are not very apparent.—EDITOR, *Dental Record.*

## BOOK NOTICES.

THE DISEASES OF CHILDREN'S TEETH. THEIR PREVENTION AND TREATMENT. A Manual for medical practitioners and students. By R. Denison Pedley, M. R. C. S., L. D. S. Eng , F. R. C. S., Edin., Dental Surgeon to the Evelina Hospital for Sick Children, Southwark, London. With numerous illustrations. Published in London by I. P. Legg & Co , 289 and 291 Regent Street, W. In America by the S. S. White Dental Co., Chestnut Street, Philadelphia, Pa., U. S. A. All rights reserved.

We are somewhat astonished that the medical profession should require a book of this kind. It would seem to us that the subjects treated are so hackneyed, so generally known, of such primary knowledge, that any college which would graduate students in either medical or dental branch would fail in the curriculum of their studies if the subjects treated in this book were neglected. However, "a good tale is never the worst for being twice told," and the more a subject is repeated the more its importance is discovered and appreciated.

The work is finely gotten up, the printing excellent, and the manual well adapted for the office tables when its subjects may be read over by "patients who wait." Mothers and fathers and all who have the care of and interest in children will find valuable truths recorded in its pages.—ED.

CATCHING'S COMPERIDIUM OF PRACTICAL DENTISTRY FOR 1895.

It is with pleasure that we hail again the advent of this "Collation of good dishes" to the table of practical and scientific dentistry. Each year we find improvements in the scope of the work, to which this year opens a new field by the addition of "Science in Dentistry." Dentistry with its "Seven league boots" makes such tremendous strides, that unless the practitioner is armed with all the publications and *reads them*, he must be distanced in the race. How thankful then should the busy dentist be to Dr. Catching and his co-workers, who read and sift the verlose matter from the chaff of prolix notes and give them in a page or less, the esculent kernel of the best articles for their consideration. To subscribe to all the journals published is what we would advise, yet to do this is beyond the pecuniary ability of many in the profession, as well as the time to read them. To those who cannot do this we would say that the next best thing is to buy Dr. Catching's book for $3.00. This, though it necessarily gives the gist of the best thoughts, a little later than when first promulgated, gives it in a manner to be appreciated by the majority. *Sharp*, *concise*, *incisive* and *brief*. Buy Catching's Comperidium for 1895.—Ed

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## THE PRACTICAL PLACE.

### As an Obtundant.

Dr. F. F. Van Woert, of Brooklyn, uses a 50 per cent. solution of sulphuric acid as an obtundant for sensitive dentine. He discovered it by accident, while endeavoring to open the pulp canals of a devitalized tooth with the acid solution. The rubber dam was over the dead tooth, and also over a carious bicuspid which stood next to it. In some way the solution got into the cavity of the living tooth, which he had in vain been striving to excavate. To his surprise, he found that the tooth which had been agonizingly sensitive, was now completely obtunded. Since that time he has been using it with very gratifying results, although not in every case with complete success. Usually, however, it enables him to excavate painlessly. He uses but little at a time, and as the affinity is soon satisfied it becomes self-limiting and will do no harm. If too much is used, it can be readily neutralized with a solution of soda bicarbonate.

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### Devitalization of Exposed Pulp.

In pulp exposure, place the devitalizing medicine in the dentine away from the point of exposure. You will thus secure devitalization with little pain, and very often more rapidly than if placed directly upon the exposed pulp. If the caries which exposes the pulp is upon the distal portion of a molar, then make a new cavity upon some mesial aspect of the tooth, and into that place the devitalizing medicine. This new cavity afterwards gives direct entrance to anterior roots, which is usually necessary for a perfect operation.—*Western Dental Journal.*

### BALSAM VARNISH.

Dr. Howard's antiseptic varnish for coating cavities preparatory to filling, consists of Canada balsam, to which has been added mercuric-chlorid and thymol, evaporated over a water-bath from twenty to twenty-eight hours, and finally dissolved in chloroform. The proper consistency can only be determined by experience and careful observation, and it is upon this that its usefulness depends. When improperly prepared it is valueless. It is not, of course, intended to retain fillings, but to aid in their adaptation, and to act as an antithermal and protective coating.—*Dental Practitioner and Advertiser.*

### A HINT ON ARTICULATION.

It is often very difficult to make a full upper denture work satisfactorily when the patient has only the four or six lower anterior teeth. If only the upper set is to be supplied, in adapting the teeth to conform to the lower teeth, leave room for the lower teeth to pass inside of them without touching, thus preventing tipping at the back. Have the lower teeth bite upon a shoulder of rubber upon the upper plate, from the pins of the teeth back about one-eighth of an inch. When the vulcanite is thus used for a masticating surface, use only the finest rubbers.—*Western Dental Journal.*

### HINTS.

Glass can be drilled quite easily with an ordinary steel drill, in the dental engine, if the instrument is kept moistened with a solution of turpentine and camphor. By the same means, cavities can be inserted for the filling of artificial teeth. In this operation it has been my custom, to grind away with the corundum wheel as much of the tooth as I desired to contour with the gold and then cut the retaining shape with the drill. Although this method is not one of recent origin, it may oftentimes be found exceedingly useful.—BY M. G. JENISON, Minneapolis, Minn., in *Ohio Dental Journal.*

### PAINLESS REMOVAL OF PULP ENTIRE.

After removal of arsenic, wipe out with a fresh solution of dialyzed iron and place in cavity a small pillet of cotton, saturated with tannin and glycerine (sat. sol.). Seal in with gutta-percha. After ten days you can remove the pulp whole, without pain or hemorrhage.—H. H. Silliman.

### To Relieve Toothache,

Wash the cavity with pyrozone, 3 per cent, dry quickly and apply chloroform, followed by melted carbolic acid.—A. W. Harlan.

### Inflammation of Pulp.

To reduce preparatory to arsenical application. Apply peroxid of hydrogen; then, on a whisp of cotton, take up bicarbonate of soda and place in cavity loosely, and saturate the surrounding parts with chloric ether; cover cotton with sandarac varnish. After this treatment the pulp is less liable to give pain from arsenic.

### The Use of Phosphorated Oil in Dentistry.

Phosphorated Oil is a sovereign remedy for removing violent pain in periostitis resulting from a carious tooth. The cavity should be cleaned and dried and a few drops placed on cotton packed in the tooth, and is held in place by gutta-percha. The pain will vanish in a few minutes. It can be kept in the cavity for days and weeks to the greatest comfort of the patient. The action is not well understood, but Dr. Albrecht claims it is due to the fatty degeneration of the tissue brought upon by the phosphorus in this form. Phosphorated oil is prepared by dissolving one part of dried phosphorus in about eight parts of heated expressed oil of almonds. The U. S. Pharm'ce preparation is 1 : 100.—By Herman Prinz, Halle, Ger.

### Gold Solders.

Take a United States $5.00 gold piece, 20 grains coin silver, 10 grains pure copper, 6 grains English toilet pins; melt the silver and copper together first; after melting this and the gold together, add the pins, flow into an ingot and roll, cut it into small pieces and melt again if it should not roll well first time; this will give a solder a little more than 19 carats fine, and flows nicely on coin gold being the same color.

This we call No. 1. Now take of No. 1:

| | |
|---|---|
| No. 1 . . . . . . . . . . . . . . . | 89 grs. |
| Coin Silver . . . . . . . . . . . . . | 7 grs. |
| Pure Copper . . . . . . . . . . . . | 4 grs. |

Melt together and roll and we have a second grade which we call No. 2, and which will flow on No. 1.

6 dwt. pure gold.
2 dwt. copper.
1 dwt. fine silver.

And you will have a 16 carat solder. In my practice only Nos. 1 and 2 are used, made according to the formulas given above."

## SOLDER FOR ALUMINUM.

The problem of a suitable solder for aluminum was ably dealt with by Mr. Joseph Richards before the Franklin Institute. After reviewing the attempts made and the failures met with, he gives his own experience in the search for the ideal solder. He wished to obtain a solder with the following qualities: 1. It must wet the aluminum and adhere firmly. 2. It must not disintegrate after exposure to the air. 3. It must be as malleable and strong as aluminum. 4. It must have a low melting point so as to be easily worked with a soldering iron. 5. It must have the same color as aluminum and not change color. 6 It must be cheap enough for general use. After two years' experimenting the essayist found that an alloy of zinc and tin in certain proportions with a little aluminum and phosphorus produced almost the desired result. After a little further trial the proportions in the alloy were placed as follows: Aluminum 1 part; 10 per cent. phosphor-tin, 1 part; zinc, 11 parts; tin, 29 parts. On remelting this solder a more fusible alloy liquates from it, corresponding as nearly as possible to the formula $Sn_3 Zn_4$, which, in the essayist's opinion, makes the best solder available for the aluminum work.

## HOW TO GET RID OF FLIES AND MOSQUITOES.

An entomologist in the *Hartfort* (Conn.) *Times*, says that the persistent use of oil of lavender *will drive flies* out of a house, and an application to face and hands at night before retiring will, no matter how many mosquitoes there may be in the bed-chamber, drive them from the sleeper. [Buy five cents' worth of oil of lavender, mix it with the same amount of water, and use a small atomizer to spray it.]

## SMALL POX.

A correspondent of the *Stockton*, (Cal.) *Herald*, writes: Appended is a recipe, which has, to my certain knowledge, been used successfully in hundreds of cases. It will prevent or cure small pox, though the pittings are filling. When Jenner discovered cow-pox in England the world of science hurled an avalanche of fame upon his head ; but when the most scientific school of medicine in the world—that of Paris—published this recipe as a panacea for small-pox, it passed unheeded. It is as unfailing as fate and conquers in every instance. It is harmless when taken by a well person. It will also cure scarlet fever. Here is the recipe, as I have used it, to cure small pox. When learned physicians said the patient must die, it cured. Sulphate of zinc, one grain, fox glove (digitalis) one grain, half teaspoonful of water. When mixed, add four ounces of water, and take a teaspoonful every hour. Either disease will disappear in twelve hours. For a child, smaller doses, according to age. If counties would compel their physicians to use it, they would need no pest-houses. If you value advice and experience, use this for this terrible disease.

### GILDING WITHOUT A BATTERY.

Clean the silver or other article to be gilded with a brush and a little ammonia water until it is evenly bright and shows no tarnish. Take a small piece of gold and dissolve it in about four times its volume of metallic mercury, which will be accomplished in a very few minutes, forming an amalgam. Put a little of the amalgam on a piece of dry cloth and rub it on the article to be gilded. Then place on a stone in a furnace and heat to the beginning of redness. After cooling it must be cleaned with a brush and a little cream of tartar, and a beautiful and permanent gilding will be produced by the operation.

### ON A LOCAL SEDATIVE FOR DEVITALIZATION OF DENTAL PULPS.

I have used several agents in the place of morphine, which drug I believe has very little anodyne properties, tannic acid, aristol, iodoform, hydrochlorate of cocaine and oil of cloves ; all have been used in the mixture but with negative results, at least in my hands. Recently, however, I have been using a mixture of belladonna extract and arsenious acid, in proportion of two of the extract to one of acid. This is made into a paste with glycerine.

I used the extract of belladonna because of the well known anodyne effect of the drug on the sensory nerves. The glycerine I use because of its emolient property and also because of its power of being easily absorbed. I have used this formula in several cases, and, so far, feel very hopeful, as I have yet to hear of any severe pain.—A.W. Diack in *Extract Register*.

### Self Reliance.

"When the young eagles are large enough to care for themselves, the mother eagle," Moses says, "stirreth up her nest, fluttereth over her young, spreadeth abroad her wings, taketh them on her pinions and flyeth away." But she does not take them to a place of plenty or safety, but in mid air shakes them off that they may the better learn to fly, and in their hunger learn to fight for prey. Children that are forever kept in the parent nest are seldom of much consequence. God reminded the Israelites that when they were children in capacity and development, "Ye have seen how I bear you on eagle's wings." But when He had brought them to Canaan He told them to go in and make homes for themselves; and when they still acted like children He punished them for their childish cowardice.

### To Imitate Gold Fillings.

Get, from a china decorator, some gold paste such as is used for decorating china. Apply it with a small pointed brush to the artificial tooth in shape and position the filling is desired. Place the tooth in the furnace and fire to red heat. If the tooth can be watched during the firing, the flowing or fixation of the gold can be readily told. Two or three coats can be used. A firing is necessary for each coat. Polish with dry plaster on the finger, or with rouge.--By B. H. Catching, D.D.S., Atlanta, Ga.

### Correct Articulation in Bridge-work.

Place on the gum, between the pier teeth, a bolster of wax, and put in position the pier crown and the dummies as they have been cemented together with wax on the articulating model. Have the patient bite on them, and when each tooth is in proper position, invert on the jaw a partial tray filled with a half-and-half mixture of marble dust and plaster, mixed with water primed with sulphate of potash. Remove from the mouth carefully, clean off the wax, and the piece is invested, ready for soldering.—Wm. Crenshaw.

### TO SECURE THE RETENTION OF APPLICATIONS ON COTTON IN TOOTH CAVITIES.

Flow oxisulfate over the pledget of cotton.—W. D. MILLER.

### HOW TO PROCURE AN IMPRESSION OF THE MOUTH WHEN THE PATIENT IS INCLINED TO NAUSEA AND VOMITING.

Get your druggist to make you some lozenges with one quarter grain of cocaine to each lozenge. Before taking the impression, allow the patient to dissolve one of these lozenges in the mouth and swallow the spittle. If one is not sufficient, give the patient another lozenge, allowing time for the lozenge to dissolve slowly, and you will find that you can take an impression with plaster of Paris without inconvenience to the patient or yourself.—C. V. SNELGROVE, L. D. S , Toronto.

Or better: Permit the patient to inhale the fumes of spirits of camphor from a napkin or handkerchief till all sense of taste and largely feeling is destroyed; then insert the plaster, and while that is in the mouth continue the inhalation.—ED in *Headlight*

I have not found bichloride of mercury capable of killing the microbes in a less strength than three grains of bichloride in 1,000 grains of distilled water. One to 1,000 will not do it!

But even one grain of the sublimate will not wholly dissolve in 1,000 grains of water, much less three grains. Add *tartaric acid*, and the solution will be perfect. Tartaric acid will give the further advantage of *preventing* any blood that may ooze out from converting the bichloride into the albuminate of mercury, which is insoluble and inert so far as destroying the pus microbes.

### PUTRESCENT PULP CANALS.

Dessicate thoroughly and then saturate with sulphuric ether and iodoform—15 grains iodoform to the ounce of sulphuric ether. Deodorize with oil of cinnamon. Fill at once.—DR. REGISTER.

### RELIEF OF AFTER PAIN OF EXTRACTION.

A pledget of cotton dipped in a saturated solution of camphor in chloroform, placed for a few moments in the socket, will almost instantly afford relief. Remove as soon as pain ceases.—D. W. BARKER.

### TO REMOVE PLASTER FROM VULCANITE PLATES

If the flasks have been left in the vulcanizer over night, some difficulty may occur in thoroughly removing all plaster. This is overcome by immersing the plates for five minutes in hydrochloric acid. —W. S. NOWELL.

### TO ADJUST RUBBER-DAM CLAMPS PAINLESSLY.

Slip over their jaws small pieces of rubber tubing, with the additional advantage of a water-tight fit.—*Dominion Dental Journal.*

### MOSQUITO BITES.

A correspondent writes to the *New York Tribune* that an effectual and speedy cure for mosquito bites is aristol. The tip of the finger is moistened with water and a little of the powder taken and rubbed on the inflamed spot.

### POULTICE FOR ALVEOLAR ABSCESS.

Boil a dried fig in a solution of boric acid. Cut in halves and sprinkle the surface with powdered boric acid. Apply to the gum. If the abscess threatens to break through the cheek, apply at the same time an ice poultic externally.—HUGENSCHMIDT.

### TO CLEAN AND REMOVE STAINS FROM TEETH.

Instead of using water with your pumice and iodine, or sulphuric acid, mix with 3 per cent. aqueous solution of pyrozone, and you will find it more effective and less deleterious to the teeth.—H. L. HARLAN.

### ACUTE PERICEMENTITIS.

At a point on the gum some distance from the affected tooth, blister by means of ammonia, capsicum, cantharides or black mustard oil, at the same time painting the gingival margin of the gum around the affected tooth with tincture of iodine. The blood supply will be deflected and the resolvent effect of the iodine will soon be felt around the apex of the root.—A. W. HARLAN.

### GUM ACACIA IN USE WITH PLASTER.

The addition of gum acacia to plaster, when used either for casting models or taking impressions, is advocated by Mr. E. Lloyd Williams. When the plaster is used for the purpose of obtaining an impression, he adds one ounce of mucilage acacia (B.P.) to a pint of alum solution; when, however the plaster is used for casting models slightly less is required. The addition of the gum acacia is said to render the plaster less pliable and more dense, and gives it at the same time a silky look.—*Jour. Brit. Association.*

### Hypersensitiveness at Necks of Teeth.

Apply trichloracetic acid 10 per cent. except where there is acid reaction of the mouth; in that case use "Robinson's remedy."—I. Austin Dunn.

### Removal of Blood Stains.

Accidental spots of blood on clothing can be promptly removed by the application of pyrozone.—J. E. Woodward.

### Diagnosis of Pulp Stones.

Persistent resistance to arsenic is a good diagnostic symptom of pulp stones. "Persistent pain that you cannot stop means pulp stones, and it means it always. There is no question about it."—Ottolengui.

### To Prevent Thick, Heavy Rubber Plates From Becoming Porous in Vulcanizing.

Dip the rubber in warm water to soften; roll it in fillings of vulcanized rubber and pack as usual. Will vulcanize quicker and will not become porous even in the thickest portions.—W. S. Simonton.

### Local Anæsthetic

| | |
|---|---|
| Alcohol, 98 per cent | f ℥ ij, |
| Chloroform | f ℥ iv. |
| Ether sulf. | f ℥ iss. |
| Camphor. | ℥ i. |

Dry the gum and apply locally for one minute, buccal and lingua surfaces.—*Del. Solar.*

### Preparing Amalgam

Some dentists will tell you amalgam should always be washed, and others, who seldom wash it, will claim this is unnecessary. I am inclined to think the difference in their observation is not so much in the cleanliness of the amalgam as in the quality of the alloy before it is mixed with mercury. I prefer, in my own practice, to use the gold and platina alloy, thoroughly rubbed up with the mercury, avoiding an excess, packing the alloy in small pieces, and gently tapping with the plugging instrument, being careful, as the filling progresses, to wipe off the surface with bibulous paper or absorbent cotton if it appears to contain a larger amount of mercury than it should. This is very important toward the last, if you wish to get the best results from your filling, especially at the margins.—Dr. W. W. Vance.

Use pieces of pumice-stone, instead of charcoal in soldering, and you will have no fumes to cause you headache or hurt your eyes, while inspecting your piece during the process.—J. H. Crossland.

### Pyrozone.

Allow me to add a word of caution regarding the 25 per cent. pyrozone solution; it cauterizes and therefore should be employed with care.

It may not be out of place to mention here that liquid alboline is an antidote for pyrozone "burn," and moreover I will say pyrozone should be used in a glass atomizer. I feel sure that this remedy would be all we could wish in cases of pyorrhea, were we able to prescribe positively for the cause, which is undoubtedly systematic.

### Pyorrhea Alveolaris.

Not a little credit is due Dr. Peirce for his untiring efforts in prognosing this disease. We shall hope that ere long a prophylactic may be discovered whereby we can safely say a cure, and a permanent cure may be established. To him a monument that shall stand for everlasting and everlasting will be the result.

### Dental Teaching.

Mention has been made of the progress in the revised system of teaching in dental colleges. The same credit is due many medical colleges, especially in respect to their establishing a chair on dental surgery, a knowledge of which is recognized as of not a little importance. It brings our specialty into closer relationship with the medical practitioner.

### SULPHURIC ACID.

A word in regard to the use of sulphuric acid for the removal of debris from the tooth root canals, "as per Callahan's method," may not be amiss here. The tooth in which it is to be used is to be exposed through the rubber-dam and coated with hot wax as a protection against the action of the acid, and a thorough application of an alkaline solution employed immediately thereafter.

### GERMAN COLOGNE.

A perfume similar to the article known as "German Cologne" may be made by the appended formula:

| | Parts. |
|---|---|
| Oil of neroli | 1 |
| Oil of patchouly | 2 |
| Oil of sandal | 2 |
| Oil of lavender | 3 |
| Oil of rose geranium | 3 |
| Oil of Canada snake-root | 9 |
| Tincture of musk | 40 |
| Water | 140 |
| Deodorized Alcohol | 800 |

—S. G. WASHINGTON.

### AN ALLOY WHICH ADHERES TO GLASS.

Walter (*Rev. Scientifique*) has found that an alloy consisting of 95 parts of tin and 5 parts of copper adheres so tenaciously to glass that it may be employed as a solder to join the ends of glass tubes. It is obtained by adding the copper to the tin previously melted, agitating with wooden stirer, casting or granulating, and then remelting. It melts at about 360° C. By adding from $\frac{1}{2}$ to 1 per cent. of lead or zinc, the alloy may be rendered either softer or harder, or more or less easily fusible. It may also be used for silvering metals or metalic thread.

### TOOTH CREAM.

So far as we know the formula for the proprietary preparations mentioned by you has never been published. Previous numbers of

"Circular" contain recipes for tooth creams, however, a typical one being here reproduced :

| | |
|---|---|
| Powdered white castile soap | 6 drs. |
| Precipitated chalk | 15 ozs. |
| Glycerine, a sufficient quantity | |
| Flavoring, to suit the taste | |

Rub the solids thoroughly together and add the flavoring in small portions at a time while the trituration is being continued, then bring to the desired consistency with glycerine. A few grains of carmine rubbed in with the solids will give a pink color.

A good tooth paste flavor is made of

| | |
|---|---|
| Oil of sassafras | 5½ drs. |
| Oil of cinnamon | 2 drs. |
| Oil of wintergreen | ½ dr. |
| Extract of vanilla | 4 drs. |
| Alcohol | 4 drs. |

—R. and B , New York

## THE CHICAGO DENTAL SOCIETY.

List of Officers of The Chicago Dental Society for 1896-7, elected at the Annual Meeting held in Columbus Memorial Building, Tuesday evening, April 7th, 1896 :

| | |
|---|---|
| President, | LOUIS OTTOFY |
| First Vice President, | J. E. HINKINS |
| Second Vice President, | H. A. COSTNER |
| Recording Secretary, | A. H. PECK |
| Corresponding Secretary, | GEO. B. PERRY |
| Treasurer, | E. D. SWAIN |
| Librarian, | H. A. GUNTHER |
| Member Board of Directors, | G. H. CUSHING |
| Board of Censors, | G. T. CARPENTER<br>B. D. WIKOFF<br>G. W. SCHWARTZ |

GEO. B. PERRY,

*Corresponding Secretary.*

THE

Dental Office and Laboratory.

FOURTH SERIES.

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# THE GOLDEN ANNIVERSARY
# OF THE
# PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS.

At a meeting of the Pennsylvania Association of Dental Surgeons, held in May, 1895, Dr. W. H. Trueman called attention to the near approach of the *Fiftieth Anniversary* of the society, and thought that so important an event should be properly celebrated. The 16th of next December would not only be the Fiftieth Anniversary of the organization of this society, but would also be the Fiftieth Anniversary of the first successful effort to organize the dental profession of Pennsylvania in the interests of dental education. "If the society survived until the 16th of December of this year, it will have been in existence that many years. His feelings in this respect were not promoted only by his affection for, and his interest and pride in, the old society—although he nourished these—but because the formation of the society led to the establishment of Dental Colleges, Dental Associations, and Dental Education in this city."

Farther discussion on this subject led to the appointment of a committee of three, Drs. Trueman, Chupein and Roberts, whose duties were to enlist the interests of the other dental societies of the city, to secure united action in celebrating this event.

It was agreed to let the matter rest until the Fall of the year, when all the societies of the city would renew their monthly meetings.

Dr. Chupein laid this subject before the "Odentological Society" at their meeting in October, and they approving the subject, appointed Drs. Faught, Boice and Broomell a committee to act for it; while through the efforts of Dr. Trueman with the "Academy of Stomatology," Drs. Robt. Huey, James Truman and Henry C. Register were appointed from this society.

The first conference committee meeting was held at the residence of Dr. Wm. H. Trueman, 900 Spruce Street, October 28th, 1895, where the matter was discussed. Dr. Trueman gave an abridged account of the formation of the society, and referred to the men who attended the meeting at which the society was organized, nearly all of whom have passed away. This narrative proved so interesting to those present that Dr. Huey moved Dr. Trueman prepare an historical synopsis of this matter to be read at the celebration. It was further determined to celebrate the event by a "Banquet."

At a subsequent meeting of the committee held on the 5th of November, at the rooms of the "Academy of Stomatology," Prof. James Truman was requested to preside over the meeting and at the Banquet.

At this meeting final arrangements were made. It was decided to hold the Banquet at the Continental Hotel, this building occupying the site of the old Philadelphia Museum, where the meeting was held at which the Pennsylvania Association of Dental Surgeons was organized and ushered into existence. At this meeting Dr. J. D. Thomas was added to the committee because of his efficiency on other occasions of a similar nature, as was also Dr. C. A. Bonsall, the president of the Pennsylvania Association of Dental Surgeons. After the appointment of the various sub-committees, to whom full power was given to act, the meeting adjourned.

Shortly after this adjournment Dr. Thomas, Chairman of the Invitation Committee sent out the following circular:

PHILADELPHIA, November, 1895.

DEAR DOCTOR:

Fifty years ago the first effort was made to organize the Dentists in Philadelphia, by forming a Society, having for its object the advancement of Dental Education.

You are cordially invited to attend a Meeting and Banquet, to celebrate the Golden Anniversary of that event, to be held at the Continental Hotel, Ninth and Chestnut Streets, on Monday, December 16th, 1895, at 7.00 P. M. Banquet at 7.30 P. M.

Kindly inform us by December 10th, if we may expect the pleasure of your company.

Seats for the Banquet will be $4.00 per plate, which amount please send to Dr. J. D. Thomas, 912 Walnut Street, Philadelphia, by December 13th, in order that a place may be reserved for you.

COMMITTEE.

Pennsylvania Association of Dental Surgeons:

DR. WM. H. TRUEMAN, DR. T. F. CHUPEIN,
DR. HOWARD E. ROBERTS.

Odontological Society:

DR. L. ASHLEY FAUGHT, DR. ALONZO BOICE,
DR. I. N. BROOMELL.

Academy of Stomatology:

DR. JAMES TRUMAN, DR. R. HUEY,
DR. HENRY C. REGISTER.

Special Committee on Invitations:

DR. L. ASHLEY FAUGHT, DR. HOWARD E. ROBERTS,
DR. J. D. THOMAS, Chairman,
912 Walnut Street.

To this call about sixty responses were received.

On the evening of the Banquet the guests were admitted by invitation cards, of which the following is a copy:

*Your presence is requested at the*
*Celebration of the Fiftieth Anniversary*
*of organized effort for*
*Dental Education,*
*on Monday evening, December sixteenth, 1895,*
*at the Continental Hotel, Philadelphia,*
*at seven o'clock,*
*Banquet at seven thirty o'clock.*

*Committee on Invitations,*
*L. Ashley Faught.*
*Howard E. Roberts.*
*J. D. Thomas,*
*Chairman.*

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THE FOLLOWING MENU WAS PREPARED FOR THE BANQUET:

**1845.** **1895.**

**Continental Hotel,**
**9th & Chestnut Sts., Philadelphia,**
**December 16th.**

Fiftieth Anniversary
of Organized Effort for the Promotion of
DENTAL EDUCATION
IN
PHILADELPHIA,
AND THE ORGANIZATION OF THE
Pennsylvania Association of
Dental Surgeons
which led to this end, on this spot, December
16th, in the year 1845.

## MENU.

BLUE POINTS.
Celery.
**SHERRY**

OX JOINT, Clear.

STRIPED BASS, a la Creme.
Olives. Potatoes Julienne.
**SAUTERNE**

FILET OF BEEF, Larded, Puree Mushrooms.
Potatoes au Gratin. Cream Spinach.

PUNCH POMMARD.

ENGLISH SNIPE.
Lettuce.
**CLARET**

Glaces. Fruit. Cakes.
CAFÉ NOIR. **CIGARS**

On the evening appointed, December 16th, a goodly company, comprising nearly all the dentists closely identified with society work in Philadelphia and its immediate neighborhood, several from New Jersey, Delaware and New York, among them a fair sprinkling of patriarchs—men who were full of active energy half a century ago—gathered in parlor C of the Continental Hotel to revive once more kindly remembrances of the past. It was indeed a typical reunion of professional brothers, a practical illustration of the wonderful change wrought by the good work done near that spot half a century ago. There was but one regret—not one of those who took part in the organization of the first dental society in Pennsylvania was present. From three we had kindly messages, the infirmities of age forbidding their presence, and a wide ocean separated us from the fourth. The others, so far as we have been able to trace them, have all passed over and joined the ever-increasing company in the great beyond. Dr. Spencer Roberts, of Philadelphia, and Dr. Jesse C. Green, of West Chester, who have been members of the Pennsylvania Association over forty years, and active in professional life more than half a century, were present, connecting links between the present and the past, and gave interesting reminiscences of their early experience, vividly contrasting dentistry and dentists as they first knew them, and as they now are.

Great credit is due to the Committee on Invitations, Dr. J. D. Thomas, chairman, ably assisted by Drs. Faught and Howard E. Roberts, and to the Committee of Arrangements, Drs. Huey and Broomell, who so well planned the entertainment, that the reception, the banquet, and the speaking passed off as pleasantly and as smoothly as a well-rehearsed play.

After the good things had been disposed of, Prof. James Truman, who presided, called the assembly to order, and in well chosen words referred to the movement we were then celebrating, which had resulted in so much good to the dentists of Philadelphia. He spoke of the men prominent in that movement, many of whom he had personally known and admired for their sterling worth and earnest devotion to the best interests of the profession they honored. He eulogized especially Dr. John Dehaven White, "a born leader of men," who was, perhaps, the first to urge upon the profession the importance of increased educational facilities. Earnestly and persistently did he labor, until he gathered around him others who, like himself, desired to see the profession raised to a higher plane. He inspired them with a measure of his own enthusiasm and energy, and has lived to see, as the result of his labors so long ago, three active dental societies and three prosperous dental colleges, having in their combined classes nearly twelve hundred students. He spoke feelingly of his long and active life, now in all probability nearing its close,* and regretted that he could not be there to tell, as he so well could, of those early struggles, and of the men who shoulder to shoulder so willingly worked with him.

He referred to Dr. Plantou, the first President of the Society, Drs. Stephen T. Beale, Eli Parry, Robert Arthur, Williams and Reinstein, the other officers of the Association, every one of them representative men, men who would honor any profession or calling. They are to us examples; let us follow their footsteps, let us accept the responsibilities they have laid upon us and see to it that we each one do his part to continue the work they so well began.

He spoke of the vast strides the profession had made in the last fifty years; of its literature, yearly increasing in value and usefulness; of its many colleges scattered all over the land; the attention given by so many of its members to scientific study, all hopeful signs of continued healthy growth; and closing, called upon Dr. William H. Trueman for a history of the first Dental Society in Pennsylvania, and of the events which led to the organization of the first Dental College in Philadelphia.

## HISTORIC ADDRESS, BY WILLIAM H. TRUEMAN, D.D.S.

We have met to-night, Mr. Chairman and gentlemen, to celebrate the golden anniversary of the first successful effort to organize the dentists of Philadelphia into a society, having for its object the advancement of dental education.† Just fifty years ago, namely, on the 16th of December, 1845, that society, The Pennsylvania Association of Dental Surgeons, met for the first time as an organized body in the lecture room of the Philadelphia Museum, a building that occupied almost the exact spot where we are now assembled. Inasmuch as it was part of that great educational impulse, which, starting at Baltimore in 1839, rapidly spread through the United States, crossed the broad ocean, and soon made itself felt wherever dentistry is appreciated, the world over, it merits more than a passing notice. Were it nothing more than the formation of a dental society, while the fact that that society there and then founded at once became an important factor in contributing to professional progress, and has for fifty long years had a continuous useful existence, when so many that preceded it, and so many that followed it, have fallen by the wayside, would of itself be a notable event; it would, however, fall far short of the important event we are celebrating to-night. The Pennsylvania Association of Dental Surgeons, unlike most, if not all other dental societies, was organized for a specific purpose.* It was the outcome of an earnest desire of the progressive dentists of Philadelphia to establish in Philadelphia a Dental College; a Dental College having a strong State Dental Society at its back, would, they were impressed, be more in touch with the profession, and its possible usefulness thereby increased.

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*Dr. White died on the 25th of December, 1895.

† American Journal of Dental Science, Vol. vi., March 1846, page 208.

It may be news to many of the present generation to be told that the first dental college at Baltimore failed to receive, from the dental profession, when it most needed it, that cordial support it had a right to expect.† It may be news also to know, that the progressive element of the dental profession was, at that time, by no means a unit as to the wisdom of organizing dental colleges. It is, however, a well attested fact.‡ That there was need of better facilities for acquiring a dental education was conceded by all; but, whether it were better to follow the method that had, in France, for nearly two centuries produced such excellent results, and which had for forty years seemed to have met the needs of the profession in England; that of confining the college instruction to theory only, and providing for dental students a chair or lectureship upon dental surgery; relegating the practical part to the office and work-room of the private preceptor; or, providing an exclusive dental school, in which dental surgery should in all branches dominate, including of the collateral branches of medicine only such and so far as the needs of a dental practitioner usually require, was a hotly disputed question, and so remained for many years. In Philadelphia, the division seriously hampered progress.

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* Valedictory Address to the first graduates of the Philadelphia College of Dental Surgery. By Dr. J. D. White, February 28th, 1853. Dental News Letter, Vol. vi, April, 1853, page 129.

† American Journal of Dental Science, Vol. I. (New Series), April, 1851, page 398.

‡ American Journal of Dental Science, Vol. I. (New Series), April 1851, page 395. An article against Dental Colleges by Dr. E. B. Gardette, and comments thereon by the editor strongly in their favor; gives a very fair expose of the arguments, pro and con, of this controversy. Dr. E. B. Gardette was the leader in Philadelphia of those opposed to dental colleges. On failing to carry his point he ceased thereafter to take any part in professional matters. We may note in this connection, that a series of resolutions offered by Dr. Elisha Townsend, at a meeting of the American Society of Dental Surgeons, held at Newport, Rhode Island, August 3d, 1852, advocating and endorsing dental colleges, was, after discussion, laid upon the table. American Journal of Dental Science, Vol. III. (New Series), October 1852, page 159.

When it was determined that Philadelphia, long recognized as an important educational center, and the acknowledged center in this country at least, of the commercial interests of the dental profession, should take another forward step in the advancement of professional interests, this question was seriously considered by the leaders of that movement. They were at first minded to adopt, could they find an established medical school of good repute willing to afford the accommodation they considered imperative, a plan that in recent years has met with favor: that of making the dental school a sort of annex to the medical. Had they required no more than mere lectureships for the dental department, the matter would quickly have been settled; this several acceptable schools offered to provide. They required, however, much more than this. At that time no medical school of repute in Philadelphia was willing to grant the accommodation needful for clinics and laboratory; while the the idea of students operating for patients was too radical a departure from the accepted methods of medical instructions to be for a moment thought of. The dentists were asking entirely too much. "You ask, for the accommodation of a *mere handful* of dental students, more room than we find ample for our large classes. It will not pay," was the final answer. I well remember, in this connection, the hot indignation with which Professor Buckingham repeated to me twenty years or more after the event, a sarcastic remark made by Prof. Mutter, at the close of a conference upon that subject; "Well, Gentlemen," he said, "I suppose after you get this thing in working order you will ask us to put a barbers' pole in front of the college." The real trouble was, but very few, in or out of the profession, had the slightest idea that in fifty years Philadelphia would be called upon to accommodate yearly nearly a thousand dental students. If there were any that even dreamed of it, rest assured, gentlemen, they were among the men whose good work we are celebrating to-night. They fully appreciated the needs of the dental student in this matter, and while laying the foundation of the proposed school determined to compromise nothing which in their judgment was essential to a thorough dental education. They set the pace which each following dental school in Philadelphia has zealously maintained.

For several years these matters were talked over at little social gatherings, prominent at which were Dr. John Dehaven White, Elisha Townsend, E. B. Gardette, Samuel L. Mintzer, Lewis Roper, Robert Arthur (who although then a resident of Baltimore, took a keen interest in the doings of his Philadelphia brethren,) and others, who had an earnest desire to cultivate and inspire among the dentists of Philadelphia a healthy professional sentiment.

Matters had so far progressed by October, 1845, that at a meeting of dentists, resident in Philadelphia, it was determined to call a convention of all the dentists in the State, interested in educational matters, for the purpose of forming a State Dental Society. In response to that call, the convention met in the lecture room of the Philadelphia Museum on the morning of the 15th of December, 1845, Dr. Ely Parry, of Lancaster, presiding. The attendance, we are told, was large, and the interest manifested very encouraging. During the day the organization was perfected, and the next morning, just fifty years ago, December 16th, 1845, the Pennsylvania Association of Dental Surgeons held its first meeting, with the following officers :—President, Dr. Gustavus A. Plantou; First Vice-President, Dr. Stephen T. Beale; Recording Secretary, Dr. C. C. Williams; Corresponding Secretary, Dr. Robert Arthur; Treasurer, Dr. F. Reinstein.

Of the original members of the Society, so far as we have been able to ascertain, Dr. J. D. White, Dr. Samuel L. Mintzer, Dr. Stephen T. Beale, and Dr. Thomas W. Evans, now of Paris, alone survive. During the fifty years that have passed, the Society has had on its membership roll, all told, nearly two hundred members, with an average membership of about fifty. Referring to the Pennsylvania Association of Dental Surgeons, the History of Oral and Dental Science in America, published in 1876, has this to say ;*

"This was the first organization which did not, almost immediately upon its formation, express its reprobation of amalgam; in fact, its whole constitution and by-laws breathes a spirit of tolerance and primal regard for the science over any outside issues, which is in some contrast to its predecessors in existence, excepting, perhaps, the Mississippi Valley.

"This association has never obtruded its merits and position on the profession, but has, nevertheless, always kept in the front rank of scientific progress. It has probably done more real work, quietly and without ostentation, than any other dental society; for, from its organization until 1864, its meetings were quarterly, since that time have been monthly, a record which no other similar organization in dentistry can exhibit."

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*History of Dental and Oral Science in America, Philadelphia, 1876, page 153.

The two dental societies here singled out have developed remarkable *staying powers.* They are the only two dental societies in the world that, so far, have lived long enough to have a Golden Anniversary.* I earnestly commend these suggestive remarks to the thoughtful attention of all interested in dental societies.

The Society fully organized, renewed efforts were made to establish the college. In this, however, unlooked-for opposition was encountered, so that it was not until October 29th, 1852, that the long-wished-for, long-hoped-for Dental College was opened by Dr. Elisha Townsend delivering the introductory lecture.†

This was the fourth dental college, so far as we know, in the world, The first, the Baltimore Dental College, at Baltimore; the second. the Ohio Dental College, at Cincinnati; the third, the New York Dental College, at Syracuse, New York.

And now, for a few minutes, gentlemen, permit me to review very briefly the history of our profession, in so far as it may be of interest to us in connection with this event.

Since the pall of the dark ages was lifted, dental surgery has received two great educational impulses. The first resulted from the life-work of that wonderful man, Ambrose Paré, whose reforms in surgical practice, and more especially his successful efforts in establishing schools for instruction, which eventually raised general surgery to the dignity of a profession, earned for him the well merited title of the Father of Modern Surgery (1). Dental Surgery in 1525, about the time when Ambrose Paré entered upon his life work, compared with the dental surgery of the present, was far in advance of the general surgery of that day compared to the general surgery of this. It had a literature that was, judging from the few fragments that have been spared to us, fully abreast of the general sciences of the times. It was the good fortune of Ambrose Paré, and it has been to the world's advantage, that he entered active life in the domain, and during the reign of Francis the First, an enlightened monarch whose laudable ambition it was to make Paris, his capital, an educational center. While surgery was his specialty, he gave to dentistry a helping hand, and so well did he plan, and so firmly did he impress upon his countrymen the importance of providing educational facilities for these two important professions, that after he died in 1590, slowly but surely the good work went on, and about 1700, in France, both surgery and dentistry occupied among the liberally learned professions a position of equality, fully acknowledged, appreciated and unchallenged. This was the first impulse. (2). From this time on, in France, our profession made rapid progress, so that in 1778, when, by his adroit statesmanship, a distinguished citizen of Philadelphia secured for the struggling colonies an offensive and defensive alliance with France, dentistry in that country had reached a higher development than anywhere else on the face of the globe. It was then that Joseph LeMaire, a dentist in practice in Paris, like many another of his countrymen, left his home and his business, and as an officer under Count Rochambeau, manfully assisted in making a justifiable rebellion, a successful revolution. That same event brought to our shores another Frenchman, James Gardette, a naval surgeon on his first cruise, who as part of his preparation for that post, as required by the French government in 1777, studied dentistry under Mons. Le Roy de la Faudiniere, a distinguished dentist of Paris. During the winter of 1781-82, when the French and American armies were in winter quarters, side by side, near Providence, Rhode Island, we may, by a little stretch of the imagination assume that the first dental school in America held its first session. Joseph LeMair was the teacher; his senior pupil, James Gardette, who had acquired a distaste for the sea and had resolved to make America his home, and in the junior class we find Major Josiah Flagg, a youth of about eighteen years, the first of a name well known in the annals of dentistry in America as leaders in more than one notable advance.

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*The Mississippi Valley Association of Dental Surgeons was organized Aug. 13, 1844. See History of Dental and Oral Science in America, page 152.

†Dental News Letter, Vol. VI., January, 1853, page 76.

1. Revival of Medicine, Encyclopedia Britannica (American edition) Vol. XV., page 808. Also see Ambrose Paré, Biographic Universelle, Ancienne et Moderine. (Michand) Leipzig, 1854, Tome Trentie Deuxieme, page 125. Nouvelle Biographic Generale. Mm. Firmin Didot Freres, Paris, 1862, Vol. 39, page 191.

The war ended, Joseph LeMair came to Philadelphia, and began

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2. Essay on the Structure and Formation of the Teeth in Man, etc., by Robert Blake, M.D., Dublin, 1801, page v. American Society of Dental Surgeons, reprint of the same, Baltimore, 1848, page x. A Practical Guide to Operations on the Teeth, etc., James Snell, London, 1831, or Philadelphia, 1832, page 50. Fitches' Dental Surgery, New York, 1829, page 17; Philadelphia, 1835, page 16.

dental practice, accompanied by Josiah Flagg, who remained under his instructions until he had mastered the art, when he returned to his home in Boston, and entered upon his professional career. In a little while, James Gardette also came to Philadelphia, began practice as a dentist, and for forty-five years, by his skill, his readiness to assist and help his professional brethren, and his gentlemanly deportment, upheld the dignity of the profession he loved. After a few years LeMair returned to Paris, resumed practice, and as a writer and practitioner he honored his profession. I take it, gentlemen, the impress that these two well educated and skillful men made upon the profession when in its infancy in the United States, has had much to do in making dentistry in America what it is, and has had much to do also in giving to dentistry in Philadelphia the high standing it has ever maintained.

We celebrate to-night, not the first effort to organize the dentists of Philadelphia in the interests of professional progress, but the first *successful* effort.

In 1817, Horace Hayden tried earnestly to bring about that which later accomplished so much. In Philadelphia, James Gardette, Edward Hudson, and perhaps a few others were in hearty accord ; but finding throughout the country so little encouragement, reluctantly, discouraged and heartsick, he relinquished the seemingly hopeless task. Again, a few years later, Dr. Spooner travelled through the country on much the same errand. He was especially interested in adapting the ceramic art to dental uses, and endeavored to hasten progress in this direction by enlisting the co operation of his brethren, rightly suggesting that by a general interchange of experience much good could be done. He too, was a pioneer, who casting his bread upon the waters, sadly saw it sink from view—not lost. No! Hayden and Spooner were sowing the seed that sprang up in 1839 and produced so bountiful a harvest.

At this date we can hardly appreciate the difficulties they had to contend with. Except to a comparatively few, that dentists practising in the same community could be anything else than business rivals was a new doctrine, difficult to understand, and slowly accepted. The invitation to come together and discuss common interests was looked upon with suspicion; while the project to found a school for the purpose of teaching the mysteries of the science, mysteries that had been so long looked upon as part of their stock in trade, and as such jealously guarded, seemed madness. Of this, Dr. Robert Arthur, in an address delivered before the Pennsylvania

Association of Dental Surgeons, January 20th, 1845, thus speaks: "Who that was present at the opening of the Convention called for the purpose of organizing this association, could have failed to observe the great coolness which prevailed at the meeting, but which gradually passed away, and, as liberal sentiments began to be poured forth, finding a ready response from men whom we had been almost disposed to look upon as narrow-minded and regardless of anything but their own selfish interests, but who, we found, were looking up as steadily and earnestly as ourselves to the elevation of the profession and increase of its usefulness, was replaced by a cheering warmth and a delightful feeling."

When we first met, we were all, or nearly all, strangers to each other, but we soon grew familiar, and in faces which were unknown before, we now see familiar features and feel that many of these acquaintances may soon become friends. *

These words of Dr. Robert Arthur suggest the keynote to that great educational impulse received by the profession in 1839 40. It was not the birth of a new science; it was not the donning of a new or more honorable mantle. It was a breaking down of that exclusiveness with which the great body of dentists had individually surrounded themselves. It was an acceptance and acknowledgment of professional brotherhood; ceasing to be competitors and becoming compeers; neighbors, yet not rivals. From this came the association, the periodicals, the colleges. It was a grand movement, and glorious has been the result the world over. It was the second and crowning educational impulse. It is the fiftieth anniversary of the advent of that movement in our midst, that we are celebrating to-night. How typical of the change wrought, this gathering together in pleasant harmony of the dental societies and the dental colleges of Philadelphia, at this festive board, to honor the memory of those who fifty years ago did for us so much, and did it so well.

At the conclusion of Dr. W. H. Trueman's historical sketch, Prof. C. N. Peirce, at the call of the Chairman, spoke as follows:

## ADDRESS OF DR. PEIRCE OF THE PENNSYLVANIA COLLEGE OF DENTAL SURGERY.

The Pennsylvania College of Dental Surgery was the outgrowth of the Philadelphia College of Dental Surgery, which was chartered in 1850, and held its first session in the Fall of 1852, occupying rooms in

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* Opening address delivered before the Pennsylvania Association of Dental Surgeons, January 20th, 1846, by Robert Arthur, D. D. S. American Journal of Dental Science, Vol. VI., March 1846, page 195.

the third, fourth and fifth stories of the building at No. 528 Arch St., now occupied by Bullock & Crenshaw, but at that time occupied and owned by the firm of Jones, White & McCurdy, now the S. S. White Dental Manufacturing Company, at Twelfth and Chestnut Streets.

The Philadelphia College of Dental Surgery completed four sessions, graduating in these four years sixty-three (63) students. Owing to the action of the trustees of this institution in conferring honorary degrees without the recommendation or consent of the faculty, the latter resigned, and the college, as a teaching institution, ceased to exist.

The charter of the Pennsylvania College of Dental Surgery was then obtained by the retiring faculty on April 3d, 1856, and the Hon. Henry C. Carey was elected President of the Board of Corporators of the new institution. At the first meeting of the Board of Corporators, held on the 6th of April, 1856, the following were elected members of the faculty:

Elisha Townsend, D.D.S., M.D., Professor of Operative Dentistry and special Pathology; Ely Parry, D.D.S., M.D., Professor of Chemistry, Materia and Therapeutics; Robert Arthur, D.D S., M.D., Professor of Principles and Practice of Dental Surgery; J. F. R. Flagg, D.D.S., M.D., Professor of Anatomy and Physiology; T. L. Buckingham, D.D.S., M.D., Professor of Mechanical Dentistry.

The College thus organized remained in the same building, 528 Arch Street, until 1863, when, owing to various reasons, such as divergency of opinion regarding who should be Dean, and the most fitting occupant of the chair of Principles and Practice of Dental Surgery, a change became necessary. This chair had several years previously been vacated by Prof. Arthur, and subsequently filled by Dr. J. L. Suesserott, who had at this time tendered his resignation, again making a vacancy, the filling of which by Dr. Geo. T. Barker, produced much animosity in a member of the faculty, which resulted in the establishment of the Philadelphia Dental College. At this time the publisher of the *Dental Cosmos* refused to issue, as heretofore, the announcement of or to advertise the Pennsylvania College of Dental Surgery in that journal, but gave its influence and sympathy to the new institution. It was this action which led to the establishment of the *Dental Times*, a quarterly journal edited and published by the faculty of the Pennsylvania College of Dental Surgery from July, 1863, to April, 1873. These events caused the removal of the Pennsylvania College of Dental Surgery from its old quarters to the southeast corner of Tenth and Arch Streets. Of its new quarters the College occupied the second, third and fourth floors, and remained in this building until the close of the session of 1877 and 1878 when again the faculty was disruptured by the establishment of the dental department of the University of Pennsylvania, this new venture withdrawing from the old institution its professors of Operative Dentistry, Mechanical Dentistry and General Pathology.

At this time the faculty was reorganized by the introduction into it of Dr. C. N. Peirce, its former Dean, Dr. Wilbur F. Litch and Dr. H. C. Chapman filling the places made vacant by the resignation of the previous incumbents, and a much larger building was secured on the northwest corner of Twelfth and Filbert Streets. In this building the second, third, fourth and fifth stories were occupied, thus more than doubling the space previously occupied for educational purposes.

From this date, the spring of 1878, the career of the college has been one of unprecedented and continued prosperity, every year recording an increase in the number of students and some important extension to the college curriculum. The number of students gradually increased until the entire class is numbered by hundreds, three hundred and thirty-five matriculates being the number for the session of 1895-96.

The radical changes in the length of term and the number of terms were met by larger classes until the faculty was again forced to look for better accommodations. The property at the northeast corner of Eleventh and Clinton Streets was purchased and thereon was erected a building in every way adapted to the purposes of a Dental College. This commodious building was occupied in the spring of 1893, at the close of the regular session of 1892-93.

The three full years passed in the new location have been of such success and advantage to the school that the wisdom of the faculty in making this change has been fully sustained. The increase in the size of the class, the improvements in the methods of teaching, the additions to the comforts of the students, faculty and auxiliary instructors, all attest the good judgment displayed in the selection of location, as well as in the arrangement of the building and the equipment of the several rooms.

This institution, from the time of its organization in 1856 to the close of the present session, 1896, will have conferred the degree of D.D.S. upon nineteen hundred and twenty-five students; of these, sixty-five have been women.

While the Pennsylvania College of Dental Surgery was practically the third in the order of organization in this country, its singleness of purpose in *dental education* has stamped it as a leading institution, and one whose consistent and unsullied record can be regarded with just pride by its graduates.

The faculty, since completing its building, recognizing that the Board of Corporators are the legal and permanent representatives of the College, have, under equitable arrangements, transferred the property to them, so that it is now, and will be for all future time, held in trust as an institution for the education of students in dentistry and the advancement of dental science.

The following comprise the Board of Corporators, the faculty, and auxiliary instructors at this date :

### CORPORATORS :

I. MINIS HAYS, M.D., President ; JOSEPH PETTIT, M.D., D.D S., Secretary ; GEORGE R MOREHOUSE, M.D., Treasurer ; J. D. WHITE, M.D., D.D S. ; T. MORRIS PEROT, Esq. ; JOHN H. BRINTON, M D. ; WILLIAM W. KEEN, M.D. ; WILLIAM H. TRUEMAN, D D.S. ; EMLEN HUTCHINSON, Esq. ; Hon. SAMUEL GUSTINE THOMPSON ; W. ATLEE BURPEE, Esq. ; JOSEPH M. WILSON, Esq. ; N. B. CRENSHAW, Esq. ; CHAS. F. BONSALL, D.D.S.

### FACULTY AND AUXILIARY INSTRUCTORS.

J. EWING MEARS, A.M., M.D., Professor of Anatomy and Surgery ; C. N. PEIRCE, D.D.S., Professor of Dental Physiology, Dental Pathology and Operative Dentistry ; WILBUR F. LITCH, M.D., D.D.S., Professor of Prosthetic Dentistry, Materia Medica and Therapeutics ; HENRY LEFFMAN, M.D., D.D.S., Professor of Chemistry and Metallurgy ; ALBERT D. BRUBAKER, M.D., D.D.S., Professor of Physiology and General Pathology ; PERCIVAL E. LODER, M.D., D.D.S., Demonstrator of Anatomy ; GEO. W. WARREN, D.D.S., Chief of the Clinics and Demonstrator of Operative Dentistry ; I. NORMAN BROOMELL, D.D.S., Chief of Prosthetic Department ; EDWARD F. WAYNE, D.D.S., Demonstrator of Chemistry ; FREDERICK R. BRUNET, D.D.S., Demonstrator of Prosthetic Dentistry ; RUPERT BEALE, D.D.S., Demonstrator of Prosthetic Dentistry ; WILLIAM B. WARREN, D.D.S., Demonstrator of Operative Dentistry ; R. WALTER STARR, D.D.S., Instructor in Crown and Bridge Work ; CHARLES S. HEARN, M.D., Instructor in Histology and Microscopy ; W. K. THORPE, D.D.S , Demonstrator of Operative Dentistry ; MARTHA ALLAIRE TERRY, D.D.S., Demonstrator of Operative Dentistry ; E. ROLAND HEARN, D.D.S., Demonstrator of Operative Dentistry ; LUTHER G. TERRY, D.D. S., Demonstrator of Operative Dentistry; LOUIS BRITTON, D.D.S., Demonstrator of Operative Dentistry; E. A. KRETSCHMAN, Instructor in Modeling; GEORGE YOUNG, E. A. THELLER, W. G. LOWERY, Clinical Assistants, Session 1894-95.

### CLINICAL INSTRUCTORS.

Dr. J. N. FARRAR, Dr. W. G. A. BONWILL, Dr. A. L. NORTHRUP, Dr. C. S. STOCKTON, Dr. CHAS. F. BONSALL, Dr. C. E. FRANCIS, Dr. E. C. BAXTER, Dr. JOHN B. WOOD, Dr. A. H. BROCKWAY, Dr. C. PALMER, Dr. T. F. CHUPEIN, Dr. W. R. MILLARD, Dr. W. H. TRUEMAN, Dr. R. HOLLENBACK, Dr. J. G. TEMPLETON, Dr. A. B. ABELL.

At the conclusion of Prof. Peirce's remarks, Prof. S. H. Guilford, of the Philadelphia Dental College was introduced, and gave a history of the institution with which he is connected :

MR. CHAIRMAN AND FELLOW-MEMBERS OF OUR COMMON PROFESSION :—

The first institution established in Pennsylvania for the imparting of knowledge in the science and art of dentistry, was organized in 1852 under the title of the Philadelphia College of Dental Surgery.

After a useful but short life of four years, it yielded to the throes of internal dissention and ceased to exist.

From its funeral pyre arose the Pennsylvania College of Dental Surgery, four members of whose faculty had held positions in the parent institution.

In the Fall of 1862, Dr. John H. McQuillen holding the chair of Operative Dentistry and Physiology in the Pennsylvania College, being displeased with a certain act of the officials of the institution, retired from the faculty. In 1863, with the assistance of other members of the profession in the city and state, and after the expenditure of much effort and the overcoming of great opposition (for characters were not as readily obtained in those days as now,) he succeeded in obtaining from the legislature of Pennsylvania a charter for a new institution under the name of the Philadelphia Dental College.

After the securing of a competent faculty and Board of Trustees, the new institution opened its first term in November of the same year. Its faculty consisted of :

Dr. J. H. McQuillen, Professor of Anatomy, Physiology and Hygiene.

Dr. J. Foster Flagg, Professor Institutes of Dentistry.

Dr. C. A. Kingsbury, Professor Dental Physiology and Operative Dentistry.

Dr. Thos. Wardell, Professor Mechanical Dentistry and Metallurgy.

Dr. Henry Morton, A. M , Professor Chemistry.

Dr. McQuillen was elected Dean and held that office continuously until his death. In 1865, Professors Kingsbury and Morton resigned and were succeeded by Dr. Geo. W. Ellis and Albert R. Leeds, A. M. In 1866 Prof. Ellis resigned and Prof. Kingsbury resumed his former chair. In 1867 Prof. Wardle resigned and Dr. D. D. Smith was elected to succeed him.

The same year two new chairs were created, one of Principles and Practice of Surgery and the other of Anatomy. Dr. James E. Garretson was chosen incumbent of the former and Dr. Harrison Allen of the latter.

In the following year, 1868, Professors Garretson and Leeds resigned and Dr. S. B. Howell was elected to succeed Prof. Leeds.

In 1869 Prof. Kingsbury resigned his chair and was made Emeritus Professor and Dr. T. C. Stellwagon was chosen as his successor.

In 1870 Prof. Flagg resigned and his chair was divided among the others.

Thus far, some change had taken place in the personnel of the faculty each year but one. During the succeeding eight years no change occurred, but in 1878 Prof. Garretson es u med his chair of Anatomy and Surgery, and Dr. Henry I. Dorr was made Adjunct Professor of Practical Dentistry.

In 1879 the chair of Dental Pathology and Therapeutics was established and Prof. Flagg was chosen to fill it. Owing to the lamented death of Prof. McQuillen during this year, some changes in the chairs were made necessary. Prof. Stellwagon succeeded Prof. McQuillen in the chair of Physiology, and his former chair of Operative Dentistry was united to that of Mechanical Dentistry. At the same time a new chair of Clinical Dentistry was established and Prof. H. I. Dorr chosen to fill it.

In 1881 Prof. Smith resigned and Dr. S. H. Guilford was elected incumbent of the chair of Operative and Prosthetic Dentistry.

In 1889 Prof. Dorr's chair was changed to that of Practical Dentistry, Anæsthesia and Anæsthetics.

From then until the death of Prof. Garretson in the present year (covering a period of fourteen years) no changes occurred, but since his death Dr. H. C. Boenning has been elected to the chair of Anatomy and Surgery and Dr. M. H. Cryer has been chosen Adjunct Professor of Oral Surgery.

Few changes have occurred in the Deanship of the institution. Prof. McQuillen held the position from the establishment of the school until the time of his death. He was succeeded by Prof. Smith who held the office for two years and he in turn by Prof. Garretson who continued in the office until it was made vacant by his death.

Of the original Board of Trustees, all are dead save two and they are no longer members. The first incumbent of the Presidency ot the Board, was Rev. Richard Newton, D. D. At his death he was succeeded by Ex-Gov. Jas. Pollock and he in turn by Ex-Gov. Jas. A. Beaver, the present President.

At the time of the inauguration of the Philadelphia Dental College there were but three other dental schools in existence ; one in Cincinnati, one in Baltimore and the third in this city, while in all combined there were less than 100 students in attendance. To-day we have three dental colleges in this city with a combined annual attendance of at least 1,000 students.

In the entire United States we have at this time nearly fifty institutions in which dentistry is regularly taught, with a total yearly attendance (as given in 1893–4) of four thousand one hundred and thirty-six pupils.

Probably one thousand graduates will issue from the dental schools in the United States at the close of the present term.

In the thirty-two years of its existence, the Philadelphia Dental College has graduated no less than 1567 students. Along with other schools it has advanced from a two years' course of four months each to a three years' course of five months, with supplemental spring and fall courses covering four months more. From an annual curriculum that required but thirty-four lectures from each professor it has developed into one in which more than one hundred didactic lectures are given annually by the incumbent of each chair. In addition to this the clinical facilities have been greatly enlarged year by year, giving to the student opportunities for the attainment of a degree of manual dexterity undreamed of thirty years ago. One of the most prominent advances of recent years has been the establishment of technic courses in the Freshmen and Junior years, cultivating not only the hand but the eye and brain, as well as adding immensely to the symmetrical development of the pupil.

The Philadelphia Dental College was the first institution to include in its curriculum, a course in Oral Surgery and the first also to establish a hospital for the treatment of diseases of the oral cavity. The late Prof. Garretson was the first to make a special study of such diseases and to constitute their consideration a part of the dental curriculum. With him the trained hand of the dentist, in conjunction with the medically educated mind, made possible operations never before attempted. His volume of Oral Surgery, the best work of his better years, remains as a monument to his matchless industry and skill and a safe guide to those who may follow in his special line of practice.

The Philadelphia Dental College in its many years of existence has lost but three of its professors through death, but of those who have thus been removed, two were conspicuous lights, with reputations that were world-wide. Both were men of indomnitable energy, wise judgment, greatness of heart and nobleness of character. Each was a master in the art of teaching and each at the time of his death was not only the Dean of the school but the most distinguished member of the faculty. In these cases at least, the old adage "death loves a shining mark," was verified. Dr. McQuillen was the founder of the school. He labored unceasingly for its proper establishment and then through all the remaining years of his life faithfully devoted himself to its development. Night and day, year in and and year out, giving liberally both of his time and money; ceaselessly, restlessly, he labored for its success. Practice, comfort, health and finally life were sacrificed in order that the school which he loved might become a temple of knowledge worthy of the respect of all men.

Dr. Garretson was as ambitious as his predecessor for the advancement of the institution with which he was connected and for the true elevation of the profession which he loved. Lofty in his aims he brought to his work a mind of rare culture joined to a zeal that seemed to know no bounds. He was a man among men, capable of inspiring in others the confidence he felt in himself, and by his counsel and acts and teachings stimulating those under his care to the attainment of all that is noblest and best in life. This brief record would be incomplete without some reference to the third one of the professors of our school, called hence by death.

Prof. C. Kingsbury ably seconded the efforts of Prof. McQuillen in the establishment of the Philadelphia Dental College, and was a member of its first faculty. He served the institution actively for six years and then continued in the honorary position of emeritus until his death, in September, 1891. He proved himself a competent and faithful teacher, and his love for the institution and devotion to its interests were manifested in a multitude of ways.

His simplicity of heart, his generous nature, his lovable character, are remembered by all of us. No one ever excelled him in loyalty to his profession and no one strove more earnestly and faithfully to place it upon the highest plane to which it might aspire. In his death denistry lost one of her most ardent devotees and the profession a true friend and brother. To these three men, each in his way adding lustre to the profession of his choice, the institution which I represent to-night would do honor. The memory of them is a rich heritage to us all, one I trust which will broaden and increase as the years go on, stimulating us to the putting forth of our best efforts toward the advancement of that calling to which we each bear loving allegiance.

The Chairman now called on Prof. Edwin T. Darby, of the Dental Department of the University of Pennsylvania, who responded in the following remarks:

When I came to Philadelphia, thirty years ago, the Pennsylvania Association of Dental Surgeons was about half grown, and it seemed to me at that time that it was also about half dead. The membership was composed largely of the faculty and friends of the Pennsylvania College of Dental Surgery. It had a new rival in the Odontographic Society, which had then just come into being. The meetings of the older Society were held in the lecture room of the Pennsylvania College of Dental Surgery, while those of the Odontographic Society were held in a lecture room of the Philadelphia Dental College. As there was much jealousy between the two Colleges, the Societies were not as friendly as they might have been. But time, that great healer of human asperity, brought about a more friendly feeling between the two Societies, and the members of one gained courage sufficient to attend the meetings of the other. The old Society has outlived its rival, and we are here this evening to celebrate its Fiftieth Anniversary. That it has been a power for good no one can doubt after hearing all of the good things which have been said of it to-night.

But, Mr. Chairman, I was asked to say something about the history of the Dental Department of the University of Pennsylvania, and I most gladly respond to that request. I may be pardoned for saying that I know a good deal about its history, for I have been a member of its faculty from the very beginning. The University of Pennsylvania was not the first to add a dental department to its lists.

Harvard and Ann Arbor each had dental departments before the trustees of the University of Pennsylvania decided to establish one. Its department of Medicine, the oldest in the country was eminently prosperous. It also had a department of Law, why should it not have a successful department of Dentistry? Its establishment had been contemplated for several years before it was done. In 1878 the dental faculty was elected and a building erected for the accommodation of the new department. Professor Essig and myself were elected to the chairs of practical dentistry, while the other chairs were filled by the faculty from the Medical department. With two other well established dental schools in the city, the task of building up another seemed formidable, but we felt that we were well supported by the trustees who had inaugurated the enterprise. Our class the first year was small, numbering, if my memory serves me correctly, only about sixty students. With each year the classes increased in size until the present, when our students number upwards of three hundred. I think it has been proven that the trustees were correct in their estimate of the need of such a department in their institution. Of the reputation of that department you are all familiar. Of its character it does not become me to speak; but I may be allowed to say that those of us who have been identified with it from its foundation are not ashamed of its history, and I trust as the years go by we shall not be less proud of the work which it is accomplishing.

At the conclusion of Prof. Darby's address, Dr. C. F. Bonsall, President of the Pennsylvania Association of Dental Surgeons was called on and spoke as follows:

As the President of the Pennsylvania Association of Dental Surgeons, Mr. Chairman and gentlemen, I take great pleasure in welcoming you to our Golden Anniversary. While appreciating as I do that we to-night have met to commemorate a movement of greater moment than the mere organization of a Dental Society, I recognize that the organization of our society was the first visible result of that effort, and its founders are the men in whose honor we have met to night. Golden Anniversaries of Dental Societies are so infrequent, we feel that it is an honor to have reached the half century line, especially so when we look back over the years that have passed. During the whole period of its existence, the Pennsylvania Association of Dental Surgeons has been constantly progressive. It has ever encouraged and assisted its members in original scientific work, and this work has been pre-eminently of a practical and helpful character.

Looking over the record, we note, that the energy of its members has been constantly directed to problems concerning our daily work, papers read at its meetings, and the discussions have all had the same practical tendency. As a result, it has gathered within its halls the progressive, the studious, the representative men of the profession in Philadelphia. This is shown by the fact that the editorial chairs of our dental journals have found worthy occupants among our members, and the names of a large majority of the dental professors of the three Dental Colleges of Philadelphia are now, or have been, on our membership roll. The multiplicity of dental societies in our midst, their strong men having been largely taken from our ranks, has reduced our numbers, but not one jot the " esprit de corps " we have inherited from the noble men, our founders. We hope to live on, to work on, and most earnestly do we hope that our successors may greet your successors—that a future president of the Pennsylvania Association of Dental Surgeons may welcome the representative dentists of Philadelphia, as near as may be on this historic spot, fifty years hence, to a celebration that shall worthily mark a full century's growth.

The Chairman now introduced Dr. Spencer Roberts, the oldest member of the Association present, who responded briefly:

MR. CHAIRMAN AND GENTLEMEN :—

I do not intend to make a speech, never having cultivated the art. I can say this much however ; it has given me great pleasure to be with you this evening to listen to what has been done in the past, and contemplate the wonderful advances made in the art of dentistry. I thank you for the courtesy shown me.

Professor W. F. Leitch, Editor of "The American System of Dentistry," was then called on by the Chairman and entertained the company with the following remarks :

In listening as I have with absorbing interest to the history of this organization and to the reminiscences connected therewith, I have been impressed with the thought that as all social organizations are made up of members drawn together by some common bond of comradeship, some special tie either of taste, of interest or vocation, such organized body takes its individuality from the dominant qualities of those who form it and each may be regarded as a composite of its members, as a composite which represents character. Character to the social organization is what the soil is to the seed, it determines development, growth, fruitage.

Many of those who organized this association I knew personally, and knowing them can realize how much of force and earnestness and zeal and fidelity and energy there was back of the movement in which their hearts were enlisted, to which they gave so much of the best effort of their lives. There was character back of this organization and that is why it has lived and why once formed it became a social factor as well as educational power.

As a social factor how much it must have accomplished in quieting antagonism, harmonizing misunderstandings, and overcoming prejudices. The younger generation of dentists can hardly realize to what extent jealousy and mistrust obtained among those who had few if any opportunities of meeting upon common ground, of gauging the worth and merit each of the other. It is difficult to estimate the value of such organizations in unifying professional sentiment, the first and essential step to true professional advancement.

There is to-day in Philadelphia in addition to several dental societies, three large educational institutions, while, throughout the land similar organizations have multiplied.

What the achievements of the last half century have been we all know ; still greater results may be looked for in the new century so soon to open. To-night we turn our retrospective gaze on the fifty years of honor and usefulness through which the Pennsylvania Association of Dental Surgeons has lived. In honor and usefulness may she still live, when a century hence the breath of that new cycle shall fan the brows of men who, following us, shall then meet to do her honor.

The chairman now called upon Dr. Jesse C. Green, of West Chester, who has been a member of the Society more than forty years, and whose keen interest in dental education and all that pertains to professional advancement has been evidenced by his long and faithful service as Secretary of the Pennsylvania State Board of Dental Examiners.

Dr. Green in reply said : The invitation to the banquet is in error when it states that the movement we have here met to commemorate was by the dentists of Philadelphia. My recollection is that it embraced the entire State, and on looking the matter up I find in the December number of Stocktons' Dental Intelligencer, 1845, an editorial note in part as follows :—" *Pennsylvania Association of Dental Surgeons.* A meeting is to be held in this city on the fifteenth of the present month by a number of dentists residing here and in other parts of the State for the purpose of organizing a society. We hope that it will be well attended and that none will be admitted to membership but such as are really worthy, etc."*

The call for the convention, which ended in the organization of this society was addressed to the dentists resident in *Pennsylvania.* When the convention met in this city December 15th, 1845, as was to be expected, Philadelphia was more fully represented than other parts of the State. There was, however, among the organizers of the Association, besides these, a sufficient number to entitle it to be considered a movement for the advancement of dental education by the dentists of the State of Pennsylvania. Outside the city of Philadelphia it had among the dentists of the State many earnest advocates—men who felt the need of some such effort to put the profession upon a higher educational plane, and who put their shoulders to the wheel, and pushed manfully to bring about the marvelous change wrought within the fifty years which have so quickly passed.

Those who can look back to 1845 and compare the profession as it was then with what it is now will see there *has* been a marvelous change.

We are apt to cite the schools, the journals, the societies, as the results of that educational movement: so they are. They have been great helps to our professional progress, but, let me remind you, they are only evidences of a greater and more marvelous change—a change that made these possible.

Those of the present generation cannot realize what the profession was fifty or more years ago, when persons commenced practice with so slight a knowledge of their duties as might be obtained after a three months' training in the private office and laboratory of some dentist, whose information had been obtained in a similar manner, for a fee of about $200 and a pledge to secrecy. Others commenced without even that preparation, not knowing how to prepare a metal cast. We cannot now realize the difficulties a dentist, anxious to advance in professional knowledge, had then to contend with.

Dentists were not then as they are now, anxious to share with their brethren any new idea, or new method, or to call attention to a

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*This journal, "Stockton's Dental Intelligencer," was published the first year folio, four pages, and three years as an octavo, part of the time monthly and part bi-monthly, by S. W. Stockton, whose dental depot was then at Third and Chestnut Sts., Philadelphia. It commenced September 1st, 1843, and ended November, 1848, making four volumes. In its day it was a useful journal. The first volume contained a series of articles by J. F. Caldwell, Surgeon Dentist of Philadelphia, on "The Structure and Diseases of the Teeth," on "Extraction," and on "*Antra Highmorrianum*, the Causes of their Disease and Remedial Treatment."

new remedy which they had found useful. They did not invite each other to their offices, or exhibit, that they might be freely copied, new instruments or new appliances. Not at all; the office and the laboratory was labelled to all dentists, "No admittance." New ideas, if communicated at all, were to be *paid for*. Every dentist looked upon every other dentist as a business rival, and it was thought perfectly right and proper to adopt any and every means to get and keep patients. Here and there, it is true, might be found some who possessed a true professional spirit, and looked upon the trade methods as we do now, but they were few and far between, and that is why the early dental societies had such a hard struggle, and why so many, after a few years of feeble existence, ceased to exist. It was the good fortune of the Pennsylvania Association of Dental Surgeons to begin its career after the reform, if I may so call it, had somewhat progressed; to have its birthplace where the professional atmosphere was more healthy, and above all, to have for its sponsors and founders so large a proportion of strong, earnest, energetic men. It is to their efforts and to the efforts of others like them that you, young men, are now indebted for the many privileges you enjoy. What a help! The thorough college training, the mutual interchange of thought in the societies and the journals, and above all the kindly, brotherly feeling that so thoroughly pervades the profession everywhere. These are the outgrowth of the educational movement commenced a little over fifty years ago.

Young men, let me urge you to make the most of these privileges. The future of the dental profession is committed to your care, see to it that its onward and upward march shall be steady and unfaltering.

The evening's entertainment was concluded by a well-rendered and much-appreciated musical vocal selection by Dr. J. D. Thomas.

## OBITUARY NOTICE.

### Wm. H. Dwinelle, M.D., D.D.S.

On February 13th, 1896, Dr. Wm. H. Dwinelle died at his home in Casenovia, N. Y., the town in which he was born and educated.

Our earliest recollections of dentists made the name of Dr. Dwinelle familiar, and we heard him spoken of in Charleston, S. C. many years ago, for his reputation as a dentist was so extensive and his practice so large that his patients were scattered all over this country.

It was therefore with considerable pleasure and curiosity that we saw him for the first time at the "Memorial Meeting" held in the lecture room of the Pennsylvania College of Dental Surgery, in this city, in honor of Prof. Thos. L. Buckingham. Here he spoke feelingly and eloquently of his deceased friend and seemed to think then that he would not long outlive him.

He is said to have been a remarkable man of varied acquirements and the closest observation. It is related of him that a surgical operation had been performed in a field and by neglect a case of instruments was forgotten. A violent rain coming on during the night, the glue to the case was dissolved, and the steel instruments all rusted by the exposure when found the next day. But Dr. Dwinelle observed that the steel instruments in the case, which lay in contact with zinc, or which had zinc handles were not rusted, and acting on this observation, he suggested that steel regulating jack-screws, made with zinc nuts, would not rust (as they invariably did when made all of steel) when exposed to the fluids of the mouth.

He was a man devoted to his profession and was instrumental with Prof. Chapin Harris in the establishment of the Baltimore College of Dental Surgery. He was generous in his incentives, and violently opposed to the patenting of any process by which humanity could be benefited, endeavoring by these means to elevate the standard of dentistry.

He had amassed a large fortune from his practice but died a poor man, his wealth being dissipated by unfortunate speculations, others reaping the advantages which he should have equally enjoyed.

Much could be written of this exceptional man as a leader of men, as a sculptor, as a fluent talker, as a careful and pungent writer, as a profound thinker, as a presiding officer, as a microscopist, as an organizer, &c., &c., &c. We loved to hear him talk, for his words were well chosen and to the point. His feelings were always charitable and a love for his fellow-man always present in his heart, for he seemed always glad to say a good word of his fellows when he could, and was silent if he could not.

He was prominent in New York society and was a member of the Union League Club, The Academy of Design, The Historical Society, and many other scientific and social organizations.

It is pleasant to those who still remain in this "vale of tears" to record the good deeds, the honest promptings, the honorable incentives, the lofty aspirations for general good of such men as Dr. Dwinelle, so that we can say, with heartfelt sorrow and affection :

"May his Soul rest in Peace," and may he soon stand face to face in the presence of his Creator to receive the "well done, thou good and faithful servant, come and receive the reward prepared for thee from the beginning."—Ed.

## ILLINOIS STATE DENTAL SOCIETY.

The thirty-second annual meeting of the Illinois State Dental Society was held at Springfield, May 12–15, 1896. A good program was carried out, and a large attendance was present. The following officers were elected:

President, C. R. Taylor, Streator; Vice President, E. B. David, Aledo; Secretary, Louis Ottofy, Chicago; Treasurer, E. D. Swain, Chicago; Librarian, J. R. Rayburn, Fairbury.

The next annual meeting will be held at Peoria, beginning on the second Tuesday in May 1897.

Louis Ottofy, Secretary,
*Masonic Temple, Chicago.*

## EDITORIAL.

### Journalistic Pilfering.

We have only words of denunciation for practices of this kind.

We are aware that in the hurry to prepare matter for a coming issue, it will sometimes occur that no acknowledgment will be made or such acknowledgment neglected to be given, but when this practice is persevered in, and articles taken from other journals divided and scattered through different pages, giving the idea to the reader that he is obligated to the journal for the valuable contribution he has read, it becomes, to say the least of it, "Journalistic Pilfering." These acknowledgments are the amenities which all editors should observe, and its non-observance denounced.

The editor of the "Items of Interest" has laid himself open to this charge on many occasions and continues in his course. Like other journals we have suffered,so that we do not complain without just cause.

## CORRESPONDENCE.

Buffalo, N. Y., May 19, 1896.

Editor of the Dental Office and Laboratory:

Dear Sir.—The fourth Annual Commencement of the Dental Department of the University of Buffalo, was held in connection with the Departments of Medicine and Pharmacy, in Music Hall, in the City of Buffalo, on the evening of Tuesday, May 5, 1896.

The Oral examination before the Board of Curators was held during the day, and the members of the Senior Class who had passed the

Faculty examinations were unanimously recommended to the Council of the University for the Degree of Doctor of Dental Surgery, which was accordingly conferred by the Chancellor.

The number of matriculates for the session was 186. The number graduates was 36 ; as follows :

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|---|---|
| Bean, C. Arthur, | New York. |
| Bridgman, Edward W., | " " |
| Buell, Charles K., | " " |
| Bunting, Sidney D., | Canada. |
| Carneron, John H., | New York. |
| Clapp, Victor A., | " " |
| Comstock, Edmund Y., | " " |
| Cutler, Horace S., | " " |
| Decker, Charles S., | " " |
| Dickson, William B., | Canada. |
| Eaton, Carl S., | New York. |
| Featherstone, Charles E., | Canada. |
| Gibson, Thomas G., | " |
| Gillman, James H., | " |
| Harlan, Rafe M., | California. |
| Kidder, Arthur, | New York. |
| Lyle, Herbert J., | Canada. |
| Lugsdin, Frank G., | " |
| Martin, Eugene L., | New York. |
| Mills, Emmet E., | Pennsylvania. |
| Müller, Wilhelm, | Germany. |
| Parish, Wesley A., | New York. |
| Quedenfeldt, Paul B. H., | Germany. |
| Rainnie, James M., | New York. |
| Redway, Richard B., | " " |
| Sanford, Lewis P., | " " |
| Squire, Henry F., | " " |
| Stadlinger, Peter A., | " " |
| Starkweather, Carl S., | " " |
| Stevenson, Walter K., | " " |
| Stewart, Charles A., | " " |
| Van Valkenburg, Jay G., | " " |
| Warren, Henry D., | " " |
| Webb, Harry C., | " " |
| Woodworth, Earl J., | " " |
| Young, Douglas H., | " " |

## THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The twelfth annual session will be held at Saratoga Springs, N. Y., commencing 10 o'clock, A. M., Monday, August 3rd, and continue in session during the proceedings of the American Dental Association.

It is earnestly requested that all State and Territorial Boards of Dental Examiners will send delegates.

CHAS. A. MEEKER, Sec'y and Treas.,
29 Fulton Street, Newark, N. J.

## BOOK NOTICE.

Gould's Illustrated Dictionary. An illustrated Dictionary of Medicine, Biology and allied sciences. Including the pronunciation, accentuation, derivation and definition of the terms used in Medicine, Anatomy, Surgery, Obstetrics, Gynecology, Therapeutics, Materia Medica, Pathology, Dermatology, Pediatis, Ophthalmotology, Otology, Laryncology, Physiology, Neurology, Histology, Toxology, Dietetics, Legal Medicine, Psychology, Climatology, etc., etc., and the various sciences closely related to Medicine, Bacteriology, Parasitology, Microscopy, Botany, Zoology, Dentistry, Pharmacy, Chemistry, Hygiene, Electricity, Veterinary Medicine, etc. By *George M. Gould*, A. M., M. D., author of "The Students' Medical Dictionary," "12,000 Medical Words Pronounced and Defined." "The Meaning and Method of Life;" editor of "The Medical News." President, 1893–1894, American Academy of Medicine; late one of the Opthalmologists of the Philadelphia Hospital. Based upon recent scientific literature. Third edition, revised. Philadelphia, P. Blakiston, Son & Co., 1012 Walnut Street—1896.

We have only words of praise for this great and invaluable work for student, writer and practitioner. Its scope is so far-reaching that no word, within the promises of its title page, will be found wanting. Not only the word, to which a clear yet succinct definition is given, but its derivation and pronunciation are accurately given. Within the short space of six years, no less than *three editions* of this popular work have been issued, and no less than 50,000 copies of the book sold, which are the best proofs of its appreciation and popularity. The definition of the word is almost always given in its place, without referring the seeker to other words of synonymous meaning. Published as it is in large octavo form, it affords the greatest latitude for further elucidation of the subject by the illustrations where there might be ambiguity. Its object is to teach, to explain, to simplify and this it does, with its conciseness, with its illustrations and with its clear forcible language. No less than 1,630 pages are given to the work, with not a line of space uselessly wasted. Besides the words given, there are tables of muscles, bones, nerves, actions, abbreviations, strains, reactions, etc., etc., etc., the work contains so many other valuable features, features which have not, as far as we are aware, been introduced into any work of the kind, that we can only pronounce it a "*Sine qua non*" of useful and scientific knowledge in the subjects of which it treats. We heartily recommend it to any practitioner and student who desires a work where his queries will be answered. It is published at $10.00 in *full sheep* or half morocco binding. A thumb index is added to these bindings for $11.00, and at $12.00 for *Half Russia* binding with thumb index. Ed.

## PAINS AFTER EXTRACTION OF THE TEETH.

This becomes sometimes so severe as to render the sufferer almost wild with pain. What will relieve in one instance seems useless in another, so that we give all the remedies which have been suggested from time to time that they may be tried in the effort to allay the suffering :

Of nitro-glycerine take a single drop *in a half glass of cold water*. The nitro-glycerine should be a one per cent. solution.

Inhale two drops of amyl-nitrate for three or four seconds, carefully, and follow the inhalation by complete rest for five minutes.

Fletcher's carbolized resin, which is composed of resin, carbolic acid and chloroform. The resin may be dissolved in the chloroform to saturation in a half ounce vial, and ten drops of carbolic acid added. It is also an excellent styptic.

Chloroform one part, and tincture of pyrethum. The combination on cotton placed in the socket.

Cleanse out the socket with phinol sodique then apply, on a loosely rolled pellet of cotton the following :

| | |
|---|---|
| Glazial carbolic acid | ʒ ij. |
| Liq. potasse | ℥ i. |
| Water | ℥ vj M. |

*Gorga's Dental Medicine.*

| | |
|---|---|
| Alcohol (best) | ℥ j. |
| Chloroform | ℥ ij. |
| Sulphuric ether | ℥ $\frac{3}{4}$ |
| Gum camphor | ℥ ss. |
| Tinct. opium | ʒ j. |
| Oil cloves | ʒ ss. |

S. Apply in the socket on a pledget of cotton.

T. B. Welch.

| | |
|---|---|
| Camphor | ʒ j. |
| Chloroform | ʒ ij. M. |

Apply to socket on cotton.

Chloroform, tinct. aconite equal parts. Apply to socket on cotton.

| | |
|---|---|
| Morphia | gr. vj. |
| Tinct. aconite | |
| Chloroform | |
| Alcohol | a. a. f. ℥ j. M. |

Apply on cotton in the socket.

Relief is often obtained by heat—a dry hop poultice held next the cheek.

Wipe out the socket with a swab of cotton wound around a match stick, so as to remove all blood clots, and syringe the socket well with hot water.

The septum in the socket next the adjoining tooth is sometimes fractured in the effort of extraction, and little speculae of bone remain within the socket, keeping up irritation. These should be removed if large enough to be seized with the tweezers or syringed out with hot water if too small. Suppress the hemorrhage as much as possible and apply to the socket cotton moistened with phenated camphor.

Dr. E. Sjoberg, of Stockholm, offers the following: Among the various remedies which are used for quieting the after-pain of tooth extraction, with or without resection, there is scarcely anything found more reliable than phenylic acid. First try a warm solution, say 3 5 Per cent.; inject it into the bottom of the alviolus with an ordinary sized syringe. Should the pain continue take phenylic acid alone and fill the alveolus with the help of a syringe, with a bent end. After a few seconds take away the superfluous fluid with a taper end made of blotting paper. Either the pure phenylic acid or the strong solution is used; a napkin, reaching the edges of the alveolus, must be pressed to both sides of the same in order to protect the surrounding parts from excoriation.

| | |
|---|---|
| Menthol crys. | gr. v. |
| Tinct. aconite | gtt. xx. |
| Chloroform, q. s | ʒ ij. |

Sig. Apply on gum over the seat of trouble with a pad of bibulous paper. *Ohio Dental Journal.*

Wash out socket by syringing with hot water, to which a few drops of carbolic acid are added, and see there are no loose speculae of bone to act as irritants, then introduce cotton saturated with

| | |
|---|---|
| ℞ Menthol | ʒ i. |
| Chloral hydrate | ʒ i. |
| Camphor gum | ʒ ss. |
| Alcohol | fl. ℥ i. |

When the pain partakes of a neuralgic character anti kamnia in 3 to 5 grain doses, phenacetine in 5 to 10 grain doses will generally give relief.

The face may be bathed with a liniment of,

| | |
|---|---|
| ℞ Laudanum | fl. ʒ ij. |
| Tinct. capsici | fl. ʒ ss. |
| Spt. camph | fl. ℥ ss. |
| Oil sassafras | fl. ʒ ii. |

DR. I. H. MORGAN, Salem, Va., in *Busy Dentist.*

In reporting a case of twelve days' pain after extracting a tooth to relieve periostitis, Mr. Bennett says relief was finally and instantly obtained by passing a Paget's knife into the socket and cutting across the nerve.—"*Journal British Dental Association.*"

THE

Dental Office and Laboratory.

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[THIRD PAPER]

# THE CONSTRUCTION OF ARTIFICIAL TEETH.

By Theodore F. Chupein, D.D.S.,
Philadelphia, Pa.

## TAKING THE BITE.

A correct impression having been secured and a cast made therefrom, and the proper fit and adhesion obtained by the manipulation we have recommended, we next proceed to "take the bite." Apart from the satisfaction which this manipulation secures to us, the

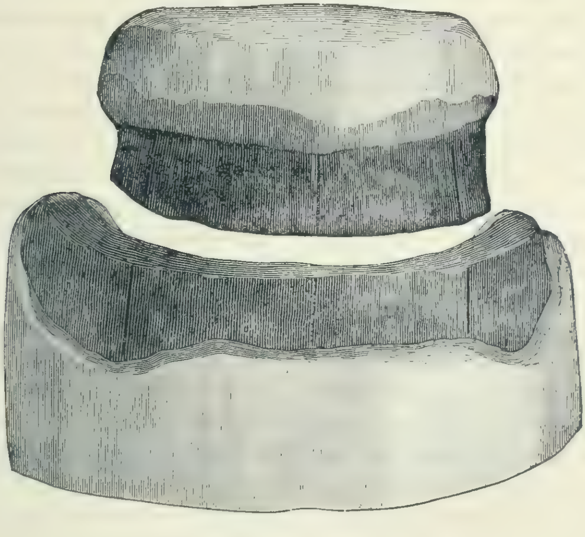

Fig. 6.
Shows the plates with the articulating wax arranged to take the bite.

possession of a rigid base plate for taking the bite, it is no small consideration towards the next most important procedure in the construction of artificial teeth.

For edentulous mouths, we warm the plate slightly and manipulate a rim of wax on it, the warmth causing the articulating wax to adhere to the plate. Placing these in the mouth, we cut wax from, or add wax to, them in order to secure the proper contour of the lips, permitting these to be neither too puffed or too depressed. This wax should not be more than one quarter to three-eights of an inch thick; that is, from the plate on which it rests to that part indicating the cutting edges of the teeth. This, however, is better determined by the features of the patient; one having a long upper lip requiring a greater thickness of wax than one having a shorter lip. The wax should be cut smooth and level on that part representing the masticating surfaces of the teeth, and should generally incline upwards and get thinner as it approaches the tuberositus of the jaw. This wax will be the guide as to the length of the teeth that will be required. The proper contour and length having been secured, we proceed to take the bite. If the case be one simply for an upper set, where the patient still has the eight lower teeth—viz.: the four bicuspids, two cuspids and four incisors—the bite is secured by simply directing the patient to bite *slightly* into the articulating wax which had been placed on the plate in the upper jaw, leaving a slight indentation of each tooth on this. An impression of the lower teeth having been taken, a cast is made therefrom, and the teeth of this cast will exactly fit into the imprints made in the articulating wax on the upper trial plate. This plan *may* do, but it is not *certain*, for, the pressure being brought against the articulating wax by the lower teeth, and despite the adhesion of the base plate, it may cause the plate to drop at the back part. It is true that when there are as many as eight lower teeth the force is not altogether exerted *forward*, but more up and down, as in the region of the bicuspids. But even in such cases, and *especially* when there are only the six lower front teeth remaining, it would be better to take *a full impression of the lower jaw, including the gums beyond as well as the teeth in front;* make a cast from this, and on this cast form a rigid base plate of modelling compound for base plates, put articulating wax on each side of this base plate, put it in the mouth, and with this take the bite (as shown in Fig. 7). Done in this way we may feel sure that there will be no dropping of the upper plate in the rear, as the pressure on the upper articulating wax is almost as great at this point as it is in front. Besides this, we prevent, in a great measure, the patients throwing the lower jaw forward when they are told to bite, as they almost invariably do. All this, we are aware, gives trouble; but it is only by taking the trouble, and taking no chances, that we can succeed. It is only the man who will do all in his power to succeed who will succeed, and who will establish a reputation for reliability and painstaking. No slouchy manipulation or slop-shop work will lead to this end.

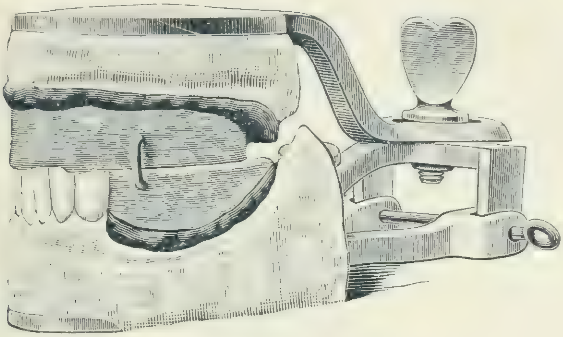

FIG. 7.

Various suggestions have been proposed in order to secure the proper occlusion of the jaws, as patients, when told to "close the teeth naturally," always do this unnaturally or forced, pushing the lower jaw *forward*, or closing to the right or the left. We have found it best to say nothing about closing the jaws *naturally*, but to engage the patients in ordinary conversation, and when all is ready to take the bite simply to tell them to "close." In cases such as we have just described, or in entire cases for both jaws, by making marks on the articulating wax of both upper and lower base plates and directing the patient to close several times, if these marks come exactly in place at each close, it is fair to presume you have secured the exact occlusion or bite. Another plan which we have found very satisfactory is to stand in front of the patient, placing the index finger of each hand on the outer edge of the lower articulating wax, and direct the patient to close. The pressure of the fingers on the wax in the neighborhood of the region of the bicuspids will often prevent the patient throwing the jaw forward, or from right to left, and thus secure the proper bite. As the jaws approach each other the fingers may be easily withdrawn.

It is always best to take an impression of the lower teeth, be they few or many, as the proper arrangement of the teeth on the upper plate may be more satisfactorily and intelligently done than when a reliance is made only on the slight imprint left on the upper articulating wax by the lower teeth. Such a manner of preparing the case, whether made as a guide for final completion by the dentist himself, or made for the dental laboratory workman to whom it may be sent, amounts to no guide whatever, and must result either in total failure, false position, or unnatural expression.

There is another consideration to be observed when taking the bite in the manner we have advised, namely: by having the ridge of the lower jaw defined, we can so arrange the bicuspids and molars on the upper plate that, in the event of the patient deciding to have a lower partial plate made at some future time, there will be no difficulty in antagonizing the lower bicuspids and molars with the upper ones, and thus not subjecting the patient to the expense of both an upper and lower plate. The bite having been secured, the next operation consists in placing the case in the articulator.

There are many of these on the market, but the one represented at Fig. 8 will be found as good as any. It is well and strongly made with no lateral motion at the hinge. It has an independent nut on the regulating screw, for the purpose of preventing the arms of the articultator from opening or closing too much, which might happen if reliance were placed solely on the regulating screw.

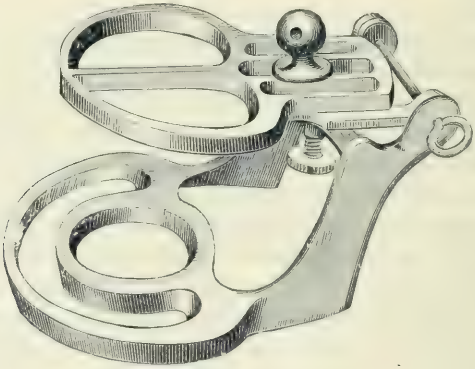

FIG. 8.

To place the case in the articulator, the casts are dressed down so that they will enter, easily, the space between the two arms of the articulator. The casts should not, however, be cut down so thin as to weaken them, but the arms of the articulator should be spread in such a way as to admit the casts and bite without this weakening by cutting. The casts and bite having been so trimmed as to enter the arms of the articulator *level*, the regulating screw should be loosened so that the arms press with a gentle, but uniform bearing on all parts of the casts. The casts should be placed in evenly, that is, the centre of the bite should be at the centre of the articulator, and the heels of the cast cover the parts designed for them on the articulator. The casts are held thus, between the arms of the articulator, *in the left hand*, and dipped in a basin of water so as to moisten the plaster. Plaster of Paris having been mixed, is plastered over the arms of the articulator *against* the casts. A small quantity of plaster is sufficient to hold the two casts in place on the articulator. The plaster having set hard, the regulating screw may now be screwed up until it touches the upper arm of the articulator, and the independent nut screw up against it so as to prevent it from loosening.

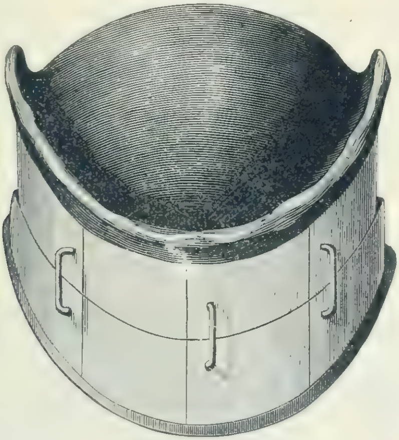

FIG 9.

The wire staples (Fig. 9), pressed into the articulating wax which were used to hold the upper and lower plates in their exact relation while these were in the patients' mouth, may now be removed, and we have the casts, in the articulator, opening and closing exactly as they did while in the mouth.

### SELECTION OF THE TEETH.

In the selection of the teeth for a dental substitute we are guided by the temperaments. But as the temperaments are subdivided almost "ad infinitum" a few rules will suffice to produce harmonious results. A person with light or blue eyes and light hair will require clear *white teeth.* One with thin lips and a sharp, or pointed nose, or thin delicate features, will need *narrow teeth.* For dark hair and dark eyes, *dark teeth* are indicated. A full broad face will require *short broad teeth.* Thick lips and flabby cheeks require *teeth that are thick on their cutting edges.* It would be as ridiculous to put in narrow teeth for a full faced lady as to expect her to be becomingly attired with a narrow brimmed hat, or to put the narrow teeth of a rat in the mouth of a horse. It is the observance of these indications which point to the artist, who certainly would not make the smoke issuing from the chimney of the cottage on the bank of the lake float in one direction, while the flag of the pleasure yacht sailing on the lake, floats in another. The indications which we have mentioned may be subdivided, according to the temperament of the patient, and it is only by the observance of all detail and all little points that we succeed in producing an artistic whole and a harmonious result.

### ARRANGING THE TEETH.

The case being mounted in the articulator as shown by Fig. 10, the wax is cut away, with the heated spatula, and the teeth set in position as shown by Fig. 10. The cut also shows where the wax has

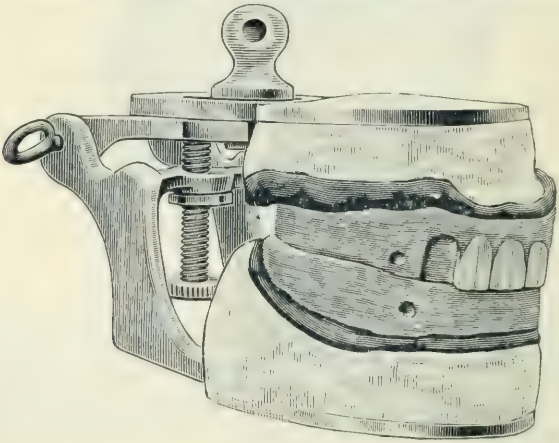

FIG. 10.

been dressed away for the reception of the cuspid. One by one the teeth are thus put in place, each tooth being slightly heated to make it adhere to the wax. The teeth should incline a little towards the mesial point. The teeth may be arranged regularly or irregularly, according as the features of the patient are pinched, or the arch small, indicating an arrangement of the natural teeth of the like nature.

The teeth being arranged on the upper plate, the six oral teeth, and the four biscupids, when placed on a level surface should all touch, except perhaps the lateral incisors, which are generally a trifle shorter. The first molar, on each side should be a little shorter than the second bicuspid and the second molar shorter than the first molar, these two teeth rising almost imperceptibly, as the tuberosities of the jaw are approached. The cuspid should be a little in advance of the lateral incisors or slightly more prominent. The bicuspids should be hidden by the cuspids, and these teeth (the bicuspids) when it is possible should be more prominent at the necks than at their occluding surfaces, so that these teeth will incline inwards, towards the tongue, rather than outwards towards the cheeks. This position, it is true, may not be noticed in the natural arrangement of the teeth, but placed thus on the artificial plate there is less liability for the upper plate to be dislodged in the act of mastication.

In making an entire set the same rule holds for the arrangement of the bicuspids on the lower plate, only that the molars rise, to meet the upper molars as these teeth approach the condoyles. In articulating an entire set, the lower cuspids should close between the lateral incisors and cuspids of the upper plate; the first bicuspid lower, between the cuspid and first bicuspid upper; the second bicuspid lower, between the two upper bicuspids and so on to the end making the teeth "break joint" as bricklayers term it. When this is found difficult to accomplish where the teeth are placed on the plates regularly, a tooth may be twisted or lapped; or a tooth may be left out, or a space left rather than not to accomplish this articulation. The six lower front teeth should not strike the six upper front teeth, but should be distant from them about the thickness of a cardboard. The pressure should be on the two biscupids and first molar of each side and these should strike simultaneously. The second or last molars should barely touch.

[TO BE CONTINUED]

[TWENTY-SIXTH PAPER.]

# LEADING QUESTIONS AND ANSWERS FOR DENTAL STUDENTS.

By Theodore F. Chupein, D.D.S., Philadelphia, Pa.

Q. Is there any difference in the treatment of teeth with abscesses according to location?

A. Yes. Teeth with abscess in the upper jaw generally yield to treatment better than those in the lower jaw.

Q. Why should this be?

A. Because the drainage is more readily secured from the upper teeth than the lower; the pus, from its own weight, will flow downward from an upper tooth, but will not flow upward from a lower.

Q. If any of the incisors or cuspids of the upper jaw be abscessed, which is the best approach to make to their roots?

A. Through their palated aspects, unless the decay is so extensive as to offer no impediment to a direct approach to their roots from their mesial or distal surfaces.

Q. What are the best approaches to upper and lower molars and bicuspids affected with abscess?

A. The mesio-masticating aspects of all molars and bicuspids of either jaw. A good approach may also be had to the nerve chamber and roots of lower molars through their buco masticating aspects.

* * * * * * * * *

Q. What is Tartar?

A. Tartar is a deposit which is found on the inside of wine barrels.

Q. What, then, is the connection of this with the deposit which we find on the teeth, and which is popularly called Tartar?

A. There is no connection, only from the resemblance of the two.

Q. What is the technical name of this deposit?

A. Salivary Calculus.

Q. What is Salivary Calculus?

A. It is a concretion or deposit of calcium salts found on the teeth.

Q. Whence is it derived?

A. It is believed to be an elimination of the saliva.

Q. What is its nature?

A. It is composed of earthy and animal constituents, the earthy constituents predominating.

Q. What are these?

A. Phosphate of lime, magnesia, animal fats or oil, filbrine and water.

Q. In what proportion are these?

A. Roughly stated, the earthy matter about three-fourths and the animal one fourth.

Q. Where do you find the deposit most profuse?

A. In the vicinity of the mouths of the salivary glands.

Q. Why do we find the outer surfaces of the upper molars, and the inner surfaces of the lower incisors so frequently thickly coated with tartar—as it is popularly called.

A. From this very circumstance—the upper molars being in the vicinity of the mouths of the superior maxillary salivary glands, and the lower incisors in the vicinity of the sublingual glands.

Q. Should this tartar be removed?

A. It should.

Q. Why?

A. Because if not removed it increases to large proportions.

Q. Is this the only reason for its removal?

A. Besides this, it irritates the gums causing them to bleed profusely, as also making these parts so painful that persons who have these large deposits, refrain from brushing their teeth on account of the pain they suffer in doing so. It makes the breath very offensive, and frequently causes the teeth to loosen and drop out.

Q. Is this concretion of tartar only observed on the teeth of man?

A. No, it is found on the teeth of all animals but more profuse with some than others. The constant chewing of the ruminant animals, keeps it from collecting on their teeth to a great extent.

Q. Is this deposit as profuse with all persons alike?

A. No. It varies in different temperaments; while the general health and mode of life have considerable effect on its deposit or formation or characteristics.

Q. Is not the deposit always the same?

A. By no means. It varies in color and constituents. Sometimes it is nearly white, sometimes of a cream color, when it is generally soft and chalky—then we find it dark brown or nearly black when it is hard and flinty, offering considerable difficulty to its removal. Thus the tartar serves as an indication or diagnosis as to the health or constitution of patient; the hard dark varieties being mostly found on persons of strong, hearty constitutions.

Q. Is the hard black tartar deposited in large quantities?

A. It is not. This kind of tartar generally consists of a ring, located about the necks of the teeth, and is never in large quantities. Neither does it affect the gums. It adheres to the teeth with great tenacity and requires considerable effort to remove.

Q. Can it only be removed with instruments?

A. It should be, but at one time muriatic acid was employed to dissolve it, which was very bad practice, as the acid would affect the teeth as well as the tartar.

Q. Will acid dissolve all kinds of tartar?

A. No. Soft white tartar will not be affected by acid, but is readily dissolved in the alkalies.

Q. Is this black tartar hurtful to the teeth and gums?

A. Ordinarily it is not and it is generally found on teeth of fine texture, as well as on the teeth of persons of good constitutions; nevertheless there is a species of black tartar which collects in larger quantities on the teeth of persons given to intemperance and debauchery. This tartar collects profusely at the mouths of the salivary ducts; it is extremely hard and firmly fixed in the teeth. It is covered with a slimy, sticky viscid mucous, is very black and exhales an insufferable odor. The food passing over this tartar, or remaining in contact with it, collects this mucous, and when it is swallowed a portion of it is taken into the stomach, which affects the general health, vitiates the saliva, inflames the gums, causing them to suppurate, and if it is permitted to remain long on the teeth, the health is so affected as to defy the treatment of the physicians to restore healthy functions.

Q. Do we notice any other kind of tartar than the light colored and black kinds?

A. Yes; we have a kind of tartar known as brown tartar. It is not as hard as the black, but harder than the light colored. It exales a fetid odor, but not as offensive as the kind last spoken of, and while it collects in tolerably large quantities, the deposit is more limited than the lighter varieties. Persons who have this variety of tartar, although not as strong or robust as those with the black deposits around the teeth, nevertheless have fairly good health.

Q. What about the lighter variety of tartar?

A. This is softer in consistency, and may be scraped or peeled off the teeth. It collects in very large quantities, sometimes depositing from tooth to tooth until the teeth are enveloped by it. It irritates the gums so that they bleed profusely when it is removed, frequently leaving the gums with a raw sore surface; the teeth are loosened and the breath made very offensive. The surface is rough. It collects most profusely at the median line of the lower incisors, on their lingual surfaces, gradually diminishing in quantity towards the molar teeth. It will sometimes creep through between the lower front teeth and deposit on the labial surfaces of these teeth, yet never in as large quantities here as on the inside of these teeth. It is noticed that the teeth on which this variety of tartar collects are not of as good texture or quality, nor are the persons as strong as those on which the brown or black variety collects.

Q. How do you prove that vigorous chewing or brushing prevents the tartar from collecting?

A. Careful brushing is known to do this, while the experience of every dentist teaches that if for any cause—say an aching tooth—the teeth of only one side of the mouth are made use of, those of the other side will be found coated with tartar, on account of the friction of the food, in the act of chewing, exerting no cleansing effect on those which are put to no use.

Q. Does the tartar adhere only to the teeth in the mouth?

A. No; artificial teeth, as well as the plates these are mounted on, are often found thickly coated with tartar.

Q. Does disease or sickness have any effect on the formation of tartar?

A. Diseases of the general system seem to effect the greater deposition of tartar on the teeth; indeed any condition by which the saliva is rendered more vicid will have this effect.

Q. Are there not some temperaments where the tartar is deposited more profusely than others?

A. There are.

Q. What is noticed about these?

A. It is observed that in those persons who exhibit a profuse deposit of tartar, that the mucous membrane is painful and irritable, and the fluids of the mouth very viscid, ropy and glutinous or sticky.

Q. Is the tartar ever deposited on the gums or mucous membrane of the mouth.

A. It is not; yet it sometimes collects in the salivary ducts, owing to a sluggish condition of the saliva, at which time it is known as a ranula.

Q. Why is it called a ranula?

A. Because of the Greek word *rana*, "a frog," the collection or deposit sometimes taking on a fancied resemblance to a frog.

Q. What circumstance seems to indicate that the deposit of tartar comes from the saliva?

A. Salivary calculus is frequently noticed in situations where it is not likely that the saliva is retained for any length of time, consequently it is evident that it must be precipitated as soon as it enters the mouth.

[TO BE CONTINUED]

## SELECTED ARTICLES.

### ALUMINUM SOLDER.

Professor Joseph W. Richards recommends for aluminum solder: Aluminum, *one part;* a 10 per cent. phosphor tin, *one part;* zinc, *eleven parts,* and tin, *twenty-nine parts.* The phosphorus seems to be an essential ingredient.

### CAPPING PULPS.

In capping pulps, H. I. McKellops, whether the pulp is actually exposed or merely sensitive to heat and cold, cuts a cap from asbestos paper and covers it with a paste of iodoform and glycerine. He is satisfied that any one who tries this method will get good results.

Dr. J. R. Southworth, of Little Rock, Ark., uses the following as a local anæsthetic instead of cocaine:

| | | |
|---|---|---|
| ℞. | Chloroform, | |
| | Tr. Aconite | aa...ʒiij |
| | Tr. capsicum | ʒj |
| | Tr. pyrethrum | ʒss |
| | Oil cloves | ʒss |
| | Pul. camphor | ʒss |

Met. fl. sol.

Directions.—Take a pledget of cotton large enough to envelop the tooth to be extracted, and the surrounding gum; saturate it with the fluid and apply to tooth and gum, holding in contact—at same time rubbing with thumb and finger—for about half a minute; after a lapse of half a minute, apply again in the same manner. Then extract the tooth.

## A NEW TREATMENT FOR BOILS.

Dr. Bower recommends for boils and carbuncles a preparation made by moistening one part of camphor with a few drops of alcohol, and rubbing in a mortar with one-fourth part of salol, till a transparent fluid is obtained, which he calls camphorated salol. On its application on cotton protected from evaporation, a change usually takes place in from twelve to twenty-four hours; pain diminishes, and the tumor becomes progressively smaller, without the formation of pus.—*Items of Interest.*

## CITRIC ACID IN DIPHTHERIA.

For many years an English physician has used pure lemon juice as the best tonic for diphtheria and sore throat in general, and mentions a case in which the son of a medical man in one of the Paris hospitals cured himself of diphtheria by constantly sucking oranges or lemons, a small basketful of which was placed for this purpose at his bedside. A Danish physician, Dr. Bock, recommends a ten per cent. solution of citric of acid, to be given in spoonful doses every two hours. *Items of Interest.*

## ACONIT TO ABORT COLDS.

The *Medical Record* strongly advocates the plan of giving aconit in the abortive treatment of colds. Small and frequent repeated doses are given with the result that the fever is controlled, the pain in the muscles disappears, and the patient put on the road to recovery. Aconit is a powerful aid in the treatment of acute bronchitis and colds in the head and chest.

## A REMEDY FOR THIRST.

Thirst and great dryness of the mouth in sickness is often relieved by a teaspoonful of powdered gum arabic, beaten thoroughly with a couple of teaspoonfuls of glycerine, to which is added a glass of cold water and enough lemon juice to make the mixture palatable. The mixture may be taken freely, with great relief to the dryness of the mouth and thirst.—*Medical Times.*

## TIN COATING FOR PLASTER CASTS.

### CHAS. P. ALKER.

Reduce ordinary collodion with about three times its bulk of ether and add powdered tin till the solution is well impregnated with the metal. Applied with a brush, an even coating of tin is formed on the model, so dense as to closely resemble tin foil, and so firm as not to be detached by boiling water. A plate vulcanized on a model thus prepared is as readily cleansed with a coarse brush as though made in a metallic mold.

## OXIPHOSPHATE FILLINGS.

Dr. McKellops, of St. Louis, Mo., says: When in treating the six-year molar of a child, if you find a small portion decayed, you find it difficult to put in an amalgam or gold filling; but by putting in carefully an oxiphosphate filling and watching it till the child is fourteen years of age, I defy any man, if the filling is properly prepared and put in, to find a particle of decay there. If you put oxichlorid in a tender tooth, you set up inflammation; but take a little iodoform and glycerine, and place it over the tender pulp, and a little asbestos paper over that, place in your oxiphosphate and let it set, you can then put in any filling you want, and it will not irritate the tooth. —*Items of Interest.*

## DRY AND STERILIZE CAVITIES BEFORE FILLING.

In the discussion of Dr. Pritchett's paper, read before the Illinois State Society, Dr. G. V. Black says: "With reference to this, I will say I do not want to dry the cavity before I fill it, and before I finish excavating it. I do not want to sterilize the cavity, with all due deference to Dr. Pritchett and anyone else who does it. In the first place, I do not want to dry the cavity before I fill it, because part of my excavating is done with the cavity dry. If I do some of it while the cavity is moist, when I finish the cavity is dry. I want to put the material against the walls of the cavity in exactly the condition they were left by my instrument. No moisture, nothing to come in contact with them after I have trimmed them, nothing to sterilize it, or anything of the kind. I want to cut until I have got strong, healthy tissue, and when I have done cutting I put the filling material against the healthy tissue just as I cut it. I believe it is the best way to do. We cannot sterilize the cavity with anything whatever and have the walls afterwards in as good condition to receive the filling as before. A tooth has a good deal of water in it, and we cannot remove much of it by any form of drying. If we do, we run great risk of serious injury to the tooth, for, as a matter of experiment, I find I cannot half dry teeth without danger of cracking them-

There is no danger in drying them with cotton. Since some experiments I have recently made, I am compelled to feel that there is danger in drying teeth by heat.—*Trans. Ill. State Society.*

## ICE TO RELIEVE DYSPEPSIA.

Pictet found that when dogs were plunged in a bath of low temperature, and kept there some time, they became ravenously hungry· Being himself a sufferer from stomach disease, he had forgotten what it was to have an appetite; so, wrapped in a thick pelisse, he descended into a refrigerating tank, the temperature being many degrees below zero. After four minutes he began to feel hungry; in eight minutes he climbed out of the tank with a painfully keen appetite. Many such experiments were made, and all the meals he took after a short stay in the refrigerator agreed with him. He found his dyspepsia was cured after the tenth descent.—*Ex.*

## A VALUABLE HINT.

"My husband," said a physician's wife not long ago, "chanced to see one day, standing on the shelf outside our kitchen window, some mould of jelly cooling for the night's dinner. They were uncovered, as they were out of reach of cats, and in full view of cook's watchful eye; but he questioned me about them, and asked if it was our usual custom to leave jelly thus unprotected. I was obliged to reply that, so far as I knew, it was. 'Then,' he said, 'don't you know that when we medical men want to secure minute organisms for investigation, we expose gelatine to the air or in places where we have confined malignant germs? The gelatine speedily attracts and holds them. I'm afraid your flavored gelatine does the same. Cool the jelly if you must, but cover it with a piece of close muslin.' And we have always done that since then."

It is to be feared that kitchen processes are sources of illness more often than is imagined. In many city houses the little kitchen annex where stands the refrigerator, and where various eatables are kept, is directly against a drain. Yet here stand daily uncovered milk, butter, often custards and puddings and various other absorbents. The average cook is absolutely ignorant of sanitary cause and effect, and the eternal vigilance of the house mother is the family's chief safeguard.—*Boston Journal of Commerce.*

## A LOCAL ANÆSTHETIC.

| | |
|---|---|
| Chloroform | 10 parts |
| Æther | 15 parts |
| Menthol | 1 part |

When used as a spray for one minute on the skin it produces local anæsthesia for three minutes.

## SERIOUS ACCIDENT FROM POTASSIUM CHLORATE LOZENGES.

Dr. Lindsay Johnson writes to the British Medical Journal: "A few days ago a private patient of mine was suffering from sores on the tongue. For the cure of these I ordered the ordinary chlorate of potash lozenges (B. P.), which he kept loose in his waistcoat pocket for convenience. Without thinking what he was doing he put an unopened Swedish safety box of matches into the same pocket. While bending down to pick up something on the floor, the lozenges rubbed against the friction paper on the outside of the box, this, set the entire box alight, and the heat kindled all the matches in the box—The heat generated, decomposed the chlorate lozenges, and the oxygen set free, intensified the combustion tenfold. The result was that the gentleman was instantly in flames, the combustion being of explosive violence. Had we not instantly thrown a pail of water over him, the result must have been fatal, as the combustion was inconceivably violent. He was frightfully burned as it was, but fortunately he has escaped without permanent disfigurement. I think in future, it might be well, if a caution were to be printed on the bottle or box in which the lozenges are kept, to the effect that they should in no case be carried loose."

## DENTAL DOTS.

### BY D. V. BEACOCK, BROCKVILLE, ONT.

Dental Dots Distilled.—Ethylate of sodium is good to use on hypertrophied gums, free from pain and danger even if used in excess.

Cocaine dissolved in chloroform, one grain to one-eighth ounce of chloroform, is good to extirpate pulps without pain.

## OXIPHOSPHATE.

### DR. W. G. A. BONWELL, PHILADELPHIA.

That it will preserve tooth-structure from further decay admits of no doubt whatever.

That it will preserve the contour of the tooth is certain in the bulk of cases.

That it will not destroy the pulp in near contact with it is equally sure.

That it will preserve tooth-structure with nearly all the decay left in the cavity and without much or really any shaping is incontestable, which I will show for a fact that I am willing to stand by and form a part of the new era of which I am here to speak. It is beyond value when you know how to mix it, how to manipulate it, how to shape it, how to treat it before you remove the dam or allow it to get wet, how to treat the phosphoric acid to keep it from crystallizing, insuring you thereby a better result in every way, and when the proper precautions are taken with these fillings, how inestimable are the results, and beyond cavil and doubt.

I cannot say too much for it—a good article. But, just here let me say, that, when you get a good article, use no other kind in the mouth. The oxiphosphate, of course, will have to be kept absolutely dry to be a perfect success.—*International.*

## HANDY DENTIMETER.

**E. B. EDGERS, D.D.S., WATERLOO, IOWA.**

Take ordinary binding wire, make a loop near the size of the root or crown you wish to measure, insert the free ends into a nerve broach-holder, tighten and twist the wire closely. You will have a correct measurement of root.

## THE REWARD OF CONSCIENTIOUS WORK.*

We particularly commend the following article to the perusal and careful consideration of the young men who are about to embark on the voyage of Dental Life. It contains advice and suggestions and truths which all may do well to heed. While we do not subscribe to *all* that the writer advances, the egg is so full of meat, that the utmost health may be obtained from its consumption, and the utmost success obtained by following its promptings.—ED.

[The following lecture was delivered in response to a note sent down to the professor by one of the students to this effect: How is a young man starting in practice to follow out the ideas taught him in college, and do work up to the standard required of him here, when he has to compete with men whose fees are so low that good work cannot profitably be done for them?]

The answer to this query involves the consideration of a very important phase of professional life. It touches a question of the most vital interest, not only to the recent graduate, but to a large body of men in the profession who have felt the discouragements of long continued endeavor in the face of obstacles such as are indicated in the question. Nor will it do for us in considering the matter, to view it entirely from a broad and general point of view with the off hand argument that right must eventually prevail, and that honesty is the best policy. This would be the form of treatment most naturally suggested for consideration, but we must descend into the details of the question, and meet the matter squarely from a practical point of view if we wish to teach the most lasting lesson.

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* To the class of the CHICAGO COLLEGE OF DENTAL SURGERY.

A young man is graduated from a college and opens an office. His competitors are doing work for fees that do not seem to him to be remunerative. He examines their work and finds that it is far from coming up to the standard taught him in college, and yet the men doing this work are probably held in esteem by the people as dentists of good repute. A temptation immediately stares that young man in the face. Why not follow the example of the other men, do work of the same character and reap the same reward? The public are seemingly not informed as to the merits or demerits of dental service anyhow, and it is a waste of energy to try to educate them. Possibly at this stage the recent graduate may encounter the example of some man in the profession who is recognized as a skillful, painstaking operator, but who has long ago been left behind in the race for money by men who are far from being his professional equals.

### THE FIRST YOUNG MAN.

The young man does not stop to consider that financial success requires the presence of other qualities besides the ability to do good work, and that possibly the operator in question lacks those qualities. He jumps at the conclusion that to do the highest type of service is a useless expenditure of time and energy which will not be appeciated by the people, and that while the high ideals outlined by his professors may be all very well for college teaching, yet something less exacting will answer a better purpose for actual everyday practice. This is a dangerous condition of mind for a young man to approach, and I wish to present to you this evening two pictures, one each of two young men following different lines of procedure after graduation, and to ask you when these pictures are drawn to decide for yourselves which you wish to emulate. I shall endeavor to outline the career of each of these young men with absolute realism, adhering as closely as I may to what I believe to be the inevitable result of the two different methods of practice.

One young man after opening an office surveys the field carefully with his weather eye out for the main chance. He sees that work is being done around him at low fees, and he recognizes the fact that for a young man to start with higher fees than are obtained by old-established practitioners in his immediate neighborhood is well nigh suicidal. He argues with himself that no man can do high grade work for low fees, and with these two ideas in his mind it is only in accordance with the common frailty of human nature for him to begin to slight his work. At first he avoids doing really disreputable work. In fact it is never in his mind to be disreputable. He simply takes less pains in his work than his professors in college required of him. All the while he is priding himself that he is really doing work that will last. It is only in minor matters that he hedges here and there. If he chances to check the enamel margin while inserting a gold filling he will burnish the gold over the crumbling prisms and fondly hope that it will do. In the preparation of a cavity he finds that it takes time and patience to extend the outlines in accordance with the principles laid down in college, and so contents himself with merely drilling out the decay and inserting the filling. To properly bevel an enamel margin requires closer attention than he feels disposed to give it, and in any event no one can tell after the filling is inserted whether the enamel is beveled or not. In molars and bicuspids he finds fissures extending from cavities, but he argues that there is no actual decay in the fissures and that it is, therefore, folly to invariably drill them out to the end. He claims to have seen fillings lasting well where fissures have been left untouched, and takes it for granted that his fillings will stand a similar test. In the treatment of pulpless teeth, he sees cases where roots have remained comfortable for years without any filling, and other cases where filling has seemed to invite trouble. He hears from so called high authority that if roots are to be filled, cotton is a good material for the purpose and readily lends his ear to this fallacy because cotton is so easily inserted.

If he encounters a case where the canals are difficult of access, he remembers that some one has advocated the sterilization and mummification of the contents of such canals, to avoid the necessity of cleaning them out. The temporary immunity from trouble in many cases of pulpless teeth treated by these methods emboldens him to greater and greater laxity, till he reaches the point where he considers the time spent upon the treatment of pulpless teeth as practically thrown away. He argues that work of this nature is seldom paid for proportionately with other dental service, and that he can mak money faster by filling ordinary cavities than by treating roots.

This idea in the end leads him to advise the extraction of many teeth that might well be saved.

In the selection of filling materials he early learns that amalgam has allurements to both patient and operator, and that to live up to the gold standard requires a degree of discipline and a striving after high ideals that he in his present mood is not inclined to subscribe to. He can make money faster and easier by filling everything with amalgam than he can by judicious and reasonable use of gold, and he dabbles with the former till his fingers lose their cunning and his ability to do good work is diminished. The avoidance of complicated operations with gold robs him of the stimulation to be had only by meeting and overcoming difficult problems, and leaves him with a gradually lessening mental and physical capacity that sooner or later throws a blight over his whole professional career.

And yet up to this time the young man has seemed to be sailing in waters that were reasonably smooth. He has not yet begun to reap the fruits of his thoughtless sowing ; but a day of reckoning is sure to come, and no man is more miserable than he who has to account for careless dentistry. Some day a patient will be present with a gold filling failing where he had burnished against a checked enamel margin. He explains the matter as best he may, but the filling must be reinserted. He cannot demand a fee for this proportionate to the time required, and often he dare not demand a fee at all. In the course of events, patients begin to return to him with a peculiar form of failure that he had not suspected. At first he is not seriously disturbed by it, because he has a ready means of shirking the responsibility. His fillings perhaps have not loosened on account of the fact that in those early days of operating he intuitively has in his mind the exploring probe of his examiner, and he has formed the habit in college of anchoring his fillings securely against this form of dislodgement. But he is confronted by annoying recurrences of decay around margins that he felt certain were perfect when he finished the filling. He notes that these recurrences manifest themselves at the points where his professors had taught him to extend the cavity in its preparation, and then he sees for the first time the full significance of the term " extension for prevention." But he is not altogether daunted, for he is able to say to the patient that his filling has not loosened, and that the failure is due to the fact that the tooth has decayed around it. The intimation is thus made that there is no fault in the work, and whether or not the conscience of the dentist is always easy, the patient is in many cases convinced, and the operator thinks he has ridden over a difficulty. But the end is not yet. After repeated failures of this kind the patient loses faith in the efficacy of dental operations, and a two-fold injury is done. Money is taken for services that were not worthy, and the patient is driven to neglect the teeth and to induce others to do the same, through a misconception as to the value of dental operations. Even where the patient persists in trying to save the teeth in the face of repeated recurrences of decay, the experience to the dentist is not very pleasant nor inspiring. Adequate remuneration cannot be had for operations that are repeated again and again, and the operator sooner or later begins to sicken of his own failures. But probably the bitterest cut in his measure of humiliation presents itself in the form of abscesses following his management of pulpless teeth. Patients apply with terribly distorted features, and exhibiting every evidence of the most intense suffering. They clamor for relief, and when he cannot succeed in giving them immediate relief they censure him for having placed them in such a predicament. Surely his chickens are coming home to roost.

Chronic abscesses continue to confront him at every hand, and he finally begins to dread to see a patient for whom he has filled a pulpless tooth. In fact, the alarming per cent. of failures in all lines of his work makes his practice a dread from day to day. He grows weary of trying to explain away this failure and that failure, and finally longs to get away from it all, and go to some other locality where his failures cannot follow him. In the end he has made neither reputation nor money from his lax methods of operating, and he considers the practice of dentistry altogether unsatisfactory, and wishes he had gone into some other profession.

This young man probably left college with good prospects. He was as well equipped as any to go out and win success. He had the ability to do good work, or at least the ability to become able to do good work. His professors in college had taken pains to instruct him in all the latest methods of modern dentistry. His friends expected much of him, and counted on his making a record for himself. He had the world before him with everything in his favor, and yet he sacrificed it all on the altar of a false purpose. He has learned when too late that nothing retaliates on a man so surely as poorly performed dental service, and instead of winning the competence he had expected he has destroyed his chance of making anything more than a mere livelihood.

### THE SECOND YOUNG MAN.

The other young man referred to leaves college under similar auspices to the one just described. He opens an office and surveys the field, and when he finds that his competitors are doing work for small fees he argues that he, a young man just starting, can surely afford to work for the same fees that older men are satisfied with. His time is not all occupied at first and this gives him the opportunity of taking the very greatest pains with what work passes through his hands. He realizes, of course, that he cannot always work for low fees and consequently must endeavor to so entrench himself in the confidence of the people that they will eventually submit to a rise of fees without leaving him. He sees that the surest way to accomplish this is to do the very best and most permanent work. His competitors' work is not up to the standard else they would not go on year after year working for unremunerative fees, and he sees an opportunity here of gaining a decided and laudable advantage over them by establishing a reputation for doing better work than they. This inspires him to the highest endeavor, and his patients soon begin to realize that they are in better hands than they have ever been before. Every perfect piece of work is a two-fold victory. It clinches the patient's confidence and it makes the operator more nearly a master of manipulation. Soon the constant endeavor to do the very best renders the very best easy to do, and he has so formed the habit of painstaking care that it has become second nature to take pains. A good operation then is only a matter of fact, while a slovenly one would haunt the operator as something uncanny and unnatural.

By following this line the young man is eventually enabled to do the best work with as little effort, and in as short a time as his competitors are doing the poorest work. He has developed into a man of greater skill than they, and the people are quick to recognize it. He finds when he starts to practice in the neighborhood, that too much amalgam is used for the good of the profession and the people, and he gradually induces his patients to have gold in suitable cases. At first he finds it impossible to obtain adequate remuneration for his gold work, but he may as well fill all his spare time by being occupied at the chair, and he tells his patient frankly that in order to prove the advantage of gold he is willing to insert it at a minimum fee. In this way he introduces gold and creates in the mind of his patient a desire for higher class dental service. After a few years, the patient sees what a properly inserted gold filling will do and willingly pays a remunerative fee for further gold work. The young man is rapidly becoming recognized as a dentist of superior ability, and his hold on the people is becoming firmer every day. He is ever on the alert for means to strengthen his position, and he sees many opportunities besides the mere performance of good work to accomplish this result, He discovers the fact that to be a perfect gentleman in all that the word implies, is a wondrously strong card. Personal cleanliness he finds to be at a premium. Clean, soft hands, with supple fingers, do a deal of advertising for him. He looks about his office to see in what particular he may make it more attractive. Snowy linen about the chair—linen of as fine quality as he can afford to buy—proves an alluring feature for the ladies, and the cuspidor and instruments always clean and sweet, he finds acceptable to every patient whether lady or gentleman.

Soon this young man has all the practice he can attend to, but as before intimated the prevailing fees are lower than they should be, and he must needs get more for his time in order to substantially provide for the proverbial rainy day. The process of advancing his fees is a delicate one and must be met with some tact, but the young man is by this time familiar with the situation, and his close study of human nature as manifest in his patients has given him the key to the proper course. In the end he finds himself with a full practice at remunerative fees. Not only this but his professional life grows more and more attractive each year. It is a pleasure instead of a dread to have his patients return from time to time. He sees in their mouths the product of his early care, and hears from their lips the commendation which after all goes fully as far as money to make a professional life worth living. He has made staunch and loyal friends of his patients, and feels that he has accomplished something in the world besides the mere accumulation of dollars and dimes.

Here are two pictures. They are not overdrawn, and while each may appear an extreme case, yet they are the exact counter-parts of those in actual existence. I leave it to you to select which you are to follow. There are varying grades between these two, but it becomes your privilege to be either the worst or the best of those I have depicted. You are just now in your formative stage, and the future success of your professional life depends upon which side you cast the die. The few words that I may say to you to-night, can contain no argument so potent as that of the examples to be seen in every day life if only you have the opportunity and the desire to look for them.

The simple facts are these: that careless work will not pay, either in a financial or professional way, and that good work will pay even though the reward may sometimes be long deferred. Look at the names of men in the profession with whom you would like to have your name connected as a peer, and see whether or not they were men who slighted their work. You have before your eyes every time you enter this lecture room the example of a man whose great renown in his profession, and whose substantial reward from his patients was the result, not of a desire to compete with his fellow practitioners in fees, but to do work that would stand the test of time. The man whose medallion likeness looks down upon you at every lecture was not influenced in the performance of his duties by the size of his competitor's fees. He came to Chicago a young man imbued with the spirit of a high ideal in his work, and he never wavered from that ideal in all the years of his practice. He cared more for the quality of his operations than he did for the fee bill of his fellows, and the consequence was that in the end he was enabled to command higher fees than they, and his manipulation was masterly up to the very latest hours of his practice. Such an achievement as his should prove an inspiration to every young man to always do the best that in him lies, and it is only by studying the careers of the great men of the past that the young men of the present may learn the possibilities of their own future.

I have taken advantage to night in answering the query sent down by one of your number, to speak at some length on a subject that I have long felt to be of the greatest moment to young men going out to practice. I am here to make an earnest plea with you to establish in your minds the highest ideals possible. Remember that you will never climb higher than the point to which you aspire, and you will never climb at all unless you have the impulse of an honest endeavor. I am here to preach to you with all the fervency of an anxious advocate the gospel of good work. I believe that in this lies the only sure means of reaching ultimate and permanent success, and I sincerely wish for you each and every one a full measure of that success. If I could know that out of the young men listening to me to-night I might in future years read the names of those high in authority in the counsels of the profession, I should esteem it an honor that I had been called upon to be one of those who had helped, in however slight a degree, to direct your early efforts.

I trust that I may yet have that pleasure.—JOHNSON, (C. N.) *Dental Review.*

# EUCAINE HYDROCHLORATE.
## A NEW LOCAL ANÆSTHETIC.

By H. Kiesel, Dentist, Berlin.

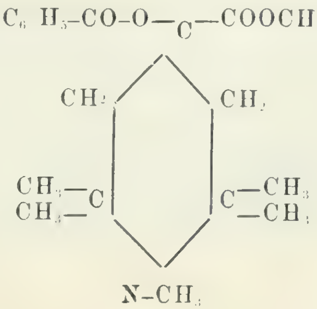
*(Translated from the "Zahnarztliche Rundschau," Berlin, April 5, 1896.)*

When one talks or writes of a new local anæsthetic nowadays, it is met with a dubious shake of the head, and either its failure or the report of toxic by-effects that rob it of all its value is awaited. For the list of such remedies is by no means a small one; yet there is none that is always applicable or successful.

Once it was thought that cocaine deserved its place at the head of the list of local anæsthetics, and it received an enthusiastic welcome. But soon its too frequently severe toxic effects were learned; it was seen that its solutions readily decomposed, and, above all, its non-reliability was recognized, since, in some cases, even large doses were found to have little or no effect, and in other instances the injection of small amounts would be followed by excessive reaction. The author has himself had the experience of an injection of 0.05 grams of cocaine (¾ grain) causing so violent a reaction that the patient remained in an apparently lifeless condition for an hour and a half. The pulse and respiration seemed to stop; amyl nitrate was useless, and the patient's life was saved only by the vigorous use of artificial respiration. Palpitation, feelings of apprehension, tiredness, apathy lasting for hours, and even vomiting are not unusual effects of cocaine injections.

In consequence of all this cocaine was soon almost banished as a means of local anæsthesia from our armamentarium. A substitute for it, on which I am about to report here, will indeed be welcome; I refer to the recently introduced remedy known as Eucaine.

Like cocaine, Eucaine is the methylester of a benzoylated oxypiperidincarbonic acid. Its constitution is represented by the formula:



The Hydrochlorate of Eucaine, which is to replace the hydrochlorate of cocaine, has the following chemical constitution: $C_{19}, H_{27} NO_4 HCl\cdot$

From a chemical point of view Eucaine has an advantage over cocaine in that it is not decomposed by boiling with water; cocaine, under similar circumstances, dividing into benzoylecgonine and methyl alcohol, and losing its efficacy as a local anæsthetic.

Eucaine, like cocaine, is used in the form of an injection. At first I employed a solution of 1:15 of sterilized water, using, according to the nature of the operation and the size of the field to be covered, from one to two syringefuls. But I soon found that higher percentages might be employed. I then prepared a solution of 1:6½, and used that thenceforth in my experiments. Their results were entirely satisfactory.

As regards the advantages of Eucaine over cocaine, I note as follows:

1. The heart is in no way influenced by it. In fact, I noticed that in very nervous patients, whose pulse had risen to 120 and 130 before the operation, the heart beats became normal and regular very soon after the injection.

2. The anæsthesia is more extensive in area and lasts longer than does that of cocaine. In some of my experiments the analgesia extended even to the muscles. In one case, where an injection was given over the first incisor, there occurred a paralysis of the ala nasi and anæsthesia of the nasal mucous membrane on the right side. The patient declared that her nose felt as if it was stopped up, but the sense of smell was not interfered with.

3. As much as 2 grams (30 grains) of Eucaine can be injected without trouble; whilst of cocaine the similarly safe dose is only 0:01 gram (1/6 grain). Thus of a solution of 1:6½, about 15 per cent. 12 syringefuls would constitute a maximum dose. Half that quantity would, however, under favorable circumstances, be sufficient to painlessly extract all the teeth from a mouth.

4. Solutions of 1:6½ in sterilized water are permanent at the ordinary temperature of the room. They remain clear without the addition of carbolic or salicylic acids and do not become flocculent as cocaine does.

5. Finally I am informed that it is intended to put Eucaine on the market at a price considerably less than that of cocaine.

When we consider the facility of application of Eucaine, the certainty of its action, and, above all, its great advantage in the absence of noxious by-effects, it is evident that it will soon become one of our most favored anæsthetic remedies.

I have known the preparation since November, 1895, and have used it exclusively. My results have been such that I have cast aside both ethyl chloride and ethyl bromide entirely.

Who among us has not experienced the excitation and vomiting that so frequently occurs in operations done under the bromide of ethyl narcosis? Who among us has not seen ethyl chloride cause excessive secretion of saliva, when extractions of the second and third molars were undertaken? Who has not met cases in which the stream of chloride of ethyl was hindered by the soft parts from reaching the second, not to speak of the third, molar? All these unpleasant things may be avoided by the use of Eucaine, without in any way interfering with the results that are aimed at.

I use a Pravaz hypodermic syringe and inject the solution about one centimeter in front of the tooth to be extracted. In this way it is rarely difficult to do a painless extraction even of the third molar. In one case, in which, on account of anchylosis, the syringe could not be advanced far enough—the third lower molar of the left side was to be extracted—I injected from without, in the direction of the diseased tooth. Four or five minutes after the injection the anæsthesia was so great that the extraction could be effected without pain. If, as sometimes does happen, the effect of the drug is not at once apparent, or is not sufficiently marked, it suffices to give a half, or in rare cases a full syringeful additional, and both patient and operator will be satisfied with the result. In none of my cases did any of my patients show any disturbance of the system at large.

In a few cases there were swellings of the cheek after the injection, though the solution and the disinfection of the syringe could not be criticized. Thereafter I cleaned the mucosa thoroughly with cotton soaked in carbolic solution before making the puncture, and I have seen no more of them.

I shall now mention two cases in which I used Eucaine which are characteristic, and will enable us to judge of its great applicability in dental practice.

The first was the first one in which I used the drug. It was the extraction of the root of the left upper canine, in consequence of a bet, the condition of which was that the extraction should be done without narcosis. With Eucaine it was done painlessly and satisfactorily.

The second case was that of a theological student, who had undergone chloroform narcosis fifteen times in half a year for surgical reasons. I knew that the patient had been operated on under chloroform, but that the narcoses had been so many was purposely concealed from me. The patient had a severe toothache, the cause of which he thought was the second superior molar of the left side, though the second inferior molar of the same side was also painful. The patient could not be convinced of his error, and demanded the extraction of the latter under narcosis. To this I finally consented, as the second left inferior molar was already lost. The patient was extremely timid, and believed that only very large quantities of ethyl bromide could procure him absolute painlessness. He consequently resisted the ethyl bromide action to the utmost. Narcosis occurred only after the administration of 25 grams ($\frac{5}{6}$ ounce) of ethyl bromide. I then attempted to extract the tooth; but the patient awoke too early and the tooth was fractured. In the evening the patient came back with violent pain and demanded that I extract the root. His condition was such that I could not think of another ethyl bromide narcotization. But a syringeful and a half of Eucaine sufficed. The next day the patient had become convinced that my opinion was right, and demanded the extraction of the second left superior molar. Again he was given an injection of one and a half syringefuls and again there was the same good effect. The patient assured me that he had felt nothing at all. These good results in extraction, together with similar ones in other operative procedures, induced me to substitute Eucaine for the cocaine in my arsenical paste. Here also its action was an excellent one. But seldom were there complaints of slight pain after the introduction of arsenic with Eucaine.

Such are my experiences; and they give me the right to ask my colleagues to replace cocaine with Eucaine in all cases so as to control my experiments and to extend the usefulness of the drug.

Eucaine is a valuable enrichment of our armamentarium; and will be at least a very dangerous rival to cocaine, as soon as it is better known.

Since the publication of the report by Dentist Kiesel, it has been found that solutions of Eucaine Hydrochlorate in the proportion of 1 part to 6½ parts of sterilized water will, after awhile, separate some of the Eucaine. To prepare permanent solutions one part of Eucaine should be dissolved in ten parts of sterilized water. Such solutions remain perfectly clear for an indefinite period of time.

# THE PRACTICAL PLACE.

## Hot Water for Hemorrhage.

Dr. Julius Scheff, Jr., of Vienna, according to the current number of *Ash's Quarterly Circular*, recommends strongly the use of hot water for arresting hemorrhage after tooth extraction. "We are accustomed," he writes, "to stop hemorrhage by the method that has been used for generations, viz.: by the direct application of cold water to the wound. Practitioners started with the idea that heat caused expansion of and induced increased bleeding from the vessels; but on the other hand, cold caused contraction. In an ordinary case of extraction, hemorrhage from the arteria dentalis, or from the gums and periosteum, soon ceases; but it frequently happens, even when the patient does not suffer from hematophilia, that there is difficulty in arresting the flow of blood." Dr. Scheff mentions three cases occurring in his practice, in each of which there is a history of profuse hemorrhage after extraction. "I allowed one patient," he says, "to take a great quantity of cold water, and yet there appeared not the slightest diminution in the bleeding. I then took a glass syringe and continuously applied hot water, in drops, to the wound, from which the blood previously trickled without cessation. After a few seconds the bleeding diminished, a coagulum was formed, and the bleeding finally ceased. With the second patient I used hot water at once and the flow of blood was arrested. In the third case the wound had been bleeding for a long time. I plugged the alveolus with iodoform gauze and on removing the plug the wound bled afresh. I then employed hot water; the hemorrhage ceased and did not recur." Dr. Scheff applies the hot water by means of a syringe, injecting it by drops into the socket of the tooth. The arrest of hemorrhage in surgical operations by the application of heat is a recognized resource, and it would therefore seem that this principle might with advantage be applied in cases of tooth extraction, especially as the mouth is able to bear a very high temperature without inconvenience. In fact, water so hot that it causes pain when the finger is inserted in it will in many cases be tolerated in the mouth.—*Lancet.*

## Periodontitis.

In Periodontitis—Instead of painting the gums with a solution of aconite and iodine, Dr. Jones injects it under the gums close to the alveolar margin. The effect, he claims, is instantaneous.—*Zahntechniche Reform.*

### India Rubber Pellets for Starting Gold Fillings.

While speaking of the means employed in the manipulation of non-cohesive cylinders, I must not omit to mention the use I make of rubber pellets. I have had the service of these little aids since 1889.* It is sometimes difficult to begin a filling easily and expeditiously against a broad surface, such as is sometimes presented at the cervix of an approximally decayed molar or bicuspid. In such cases my procedure is as follows: I lay a large loose rolled cylinder sideways against the surface in question, then place upon it an egg-shaped pellet of rubber large enough to reach across the cavity. Now, with a blunt-end plugger or with the foil-pliers, I press the pellet firmly against the tooth wall covered by the gold, exerting special pressure over the retaining groove. Upon removing the rubber there appears a perfectly adapted shell of gold. By tamping down in this manner one or two more cylinders, I secure a broad foundation and a thick mat of gold thorougly overlapping that much-dreaded cervical margin. Into the shell may be built any kind or form of gold. Again, at times, we are reduced to one-hand manipulation, as in filling labial (facial) cavities of incisors or cuspids. The trouble in making a good start here can easily be overcome by using soft cylinders with the rubber pellet. Dr. Herbst uses cotton for this purpose, but there is danger here of fibres becoming entangled in the gold. Rubber is free from this objection. By its gentle, elastic, resilient action it literally spreads the gold into the inequalities of the cavity surface, and on release of pressure creeps away, leaving a self-retaining shell upon which, as said before, with any kind of gold, the filling may easily and safely be continued.—Dr. L. C. F. Hugo, in *The Dental Cosmos.*

## LUBRICATE YOUR DISKS AND STRIPS.

We see so many dentists still using sand paper disks and strips in finishing fillings without vaseline or oil to lubricate them, that we feel like once more calling attention to this matter. It is a censurable species of inhumanity to run a disk, dry, on a gold filling, or to seesaw a strip back and forth between teeth without using a lubricant. A disk or strip will not heat up so rapidly if covered with vaseline, and contrary to prevalent opinion, the cutting properties will be improved. Quite often the question is asked by those who never use a lubricant: " But will not the vaseline or oil prevent the sandpaper from cutting?" A careful test of the matter will prove to these men that their impressions are wrong. If there were no other recommendations for the use of lubricants than the one of increased cutting power, this would be a sufficient inducement to always employ them. When disks are used with the rubber dam in place, it is extremely difficult to prevent a dry disk from catching up the dam in its revolutions and tearing it, but a disk well lubricated will play over the dam with little danger of a mishap. Another recommendation lies in the fact, that when well smeared with vaseline, a disk becomes flexible, and can be pressed into depressions and be made to cut at any desired point by guiding it with an instrument. This is well nigh impossible when a dry disk is used.

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* Mr. Dall, of Glasgow, informs us that he has used pellets of fine cork for the same purpose for some years past with great satisfaction.—*C. A. & S.*

This latter consideration is very important wherever a disk is employed between teeth for finishing a filling. If a proper contour is to be left to the filling, it is necessary that the disk shall cut only at the cervical portion of the filling and not at the contact point. A flexible disk may be pressed against the neck of the tooth if desired, and all the cutting confined to that region, but a dry disk will almost invarably cut away the contact point and make a flat filling. The variety of curves to be given a flexible disk in cutting, is limited only by the dexterity of the operator. Another argument in favor of lubricating the disk or strip is one of economy. In this condition it will hold the fine particles of gold on its surface, and the dentist who preserves his old disks and strips for a time, and then turns them over to a refiner for melting will be surprised at the result.—*Dental Review.*

## PROTECTION OF NEARLY EXPOSED PULPS.

W. J. PHILIPS.

Make a wafer of gutta-percha, and moisten one side with eucalyptol. Lay with moistened side down over point of near exposure and cover with oxiphosphate. When this has hardened, fill as desired.

## LIQUID DENTIFRICE.

L. J., Pennsylvania.—The formula for the liquid dentifrice you inquire about has not been made public, we believe. You can make a very serviceable preparation of the same character by the following recipe :

| | |
|---|---|
| Castile soap (white) | ½ oz. |
| Oil of peppermint | 5 drops. |
| Oil of wintergreen | 12 drops. |
| Glycerine | ½ oz. |
| Water | 1 oz. |
| Alcohol | 2 ozs. |
| Cochineal tincture, sufficient to color. | |

Quillaia is sometimes used in similar mixtures instead of soap ; but the soap is preferable, as quillaia is a very irritating substance, and its active principle, saponin, is credited with being a decided poison.

Wintergreen, which is the leading flavor in the foregoing mixture, seems to be popular for the pupose, and peppermint is very efficient in "sweetening" the breath ; but, of course, other aromatics may be used in their stead. A very fine combination is found in the celebrated Eau de Botot, an imitation of which is made as follows :

| | |
|---|---|
| Oil of peppermint | 30 mins. |
| Oil of spearmint | 15 mins. |
| Oil of cloves | 5 mins. |
| Oil of red cedar wood | 60 mins. |
| Tincture of myrrh | 1 oz. |
| Alcohol | 1 pt. |
| Compound cochineal tincture, sufficient to color. | |

As here given this preparation is intended to be used as a perfuming wash after applying soap, etc., but of course soap may be dissolved in it, in the proportion indicated above, if it is desired to have it act as a detergent.

Care must be taken in making it not to confound the oil of cedar wood with the oil of cedar commonly sold ; the latter is from an entirely different source and smells like turpentine ; while the former has the odor peculiar to the wood so largely used in the manufacture of pencils.—*Druggists' Circular.*

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# SOME CAUSES OF TOOTH-LOSS OTHER THAN DENTAL CARIES.

William H. Trueman, D.D.S , Philadelphia, Pa.

A paper read before the Pennsylvania Association of Dental Surgeons, April 14, 1896.

In recent years—especially since attention has been called to the probability of controlable systemic conditions being responsible for much dental trouble, heretofore, for the most part, the subject of local treatment only—pyorrhea and other diseased conditions of the teeth and surrounding tissues have received from the progressive element of the profession a large share of attention. Close attention to the current ideas expressed in the dental journals has impressed me that there is at this time need of more accuracy in discriminating between the varying forms of this disease and of those other diseases which at some stage of their progress closely simulate it; and of still other disorders, in all probability quite dissimilar, that are, I am impressed, frequently confounded with it.

The term pyorrhea alveolaris has ceased to be expressive of any particular line of symptoms, and is used to include alike the most trivial and innocent deviations from the normal and those so grave as to threaten not only the dental tissues, but even life itself. The attempt to correct this by grouping together under the generic term pyorrhea, various allied conditions and distinguishing these by adding other supposed to be suggestive terms, appears to me, while perhaps quite scientific, too often misleading, and too cumbersome to be practically useful. We want to know, when a case of successful treatment of pyorrhea alveolaris is reported, or a complete and discouraging failure confessed, what the conditions were that so readily yielded to or so obstinately resisted remedial measures. We want to know whether the result was due to superior skill or to more serious pathological conditions.

With some surroundings, a trifling tartar deposit may give rise to pronounced and alarming symptoms, in themselves, however, quite innocent, due, it may be, to concurrent systemic conditions—symptoms that will subside as those systemic symptoms subside, although the tartar may be undisturbed. The removal of the tartar in such cases is usually quickly followed by a complete return to a normal condition of the teeth and their surroundings. We would hardly consider this a recovery from pyorrhea, nor yet do I think we are warranted in assuming it to be a case of *cure while in its earlier stages.* Such cases have no significance in this connection. Although we recognize neglected tartar deposits a possible cause of grave sequences, we all have, I presume, seen, in neglected mouths, such deposits that have remained undisturbed for many years, without causing the slightest deviation from the normal; indeed, cases are reported, and I have seen many, where enormous deposits have been long tolerated without exciting other than mere mechanical irritation. I am impressed that we need most, at this time, to assist a clear understanding of the many causes of tooth-loss other than caries, a more comprehensive idea of what these causes are. We need to know and clearly distinguish, first, the normal from the abnormal; second, of the abnormal which have assumed pathological conditions, those due to local and those due to systemic causes; and, third, of the systemic conditions, those which act directly upon the tissues involved and those in which the tissues are merely subjective. They happen to be, for the time being, a weak spot; or, by a mere chance, as it were, happen to receive the impress of some systemic derangement that sooner or later localizes somewhere, and in some one of many possible forms. True, there may be a combination of causes. A primal local may invite to that spot some morbid condition that otherwise would manifest itself elsewhere, or that might have in a short time ceased to exist. Systemic conditions may permit a local irritation that would otherwise have been trifling, to become of serious moment. It is my purpose in this paper, as best I can, to give especial attention to those causes not allied to pyorrhea, although often confounded with it, sometimes, indeed, leading to it.

Normal causes of tooth-loss. Can we conceive of such a thing? Shall we admit that the loss of these important organs can possibly be a part of nature's plan? Is the loss of the hair in bald-headed families, families of which there are many, whose members, generation after generation, become, as we term it, *prematurely bald*, normal or abnormal? There are in these cases, for the most part, no recognizable diseased condition to account for the early loss of the hair, nor yet, so far as I know, any suggestion that pathology plays any important part in accounting for its early or late change in color. We usually associate the snowy or silvery locks with advanced age. Is old age a disease? Is this accompaniment of it normal or abnormal? We may here bear in mind that age is development; in this connection years do not count. Many a man at fifty is as old, so far as development is concerned, so far as impaired vitality is concerned, so far as age is betokened by those physical changes comprehended by the term *infirmities of age*, as are others at eighty or ninety; all this, and the man is not sick. He has simply become old before his time.

While writing this, I am interrupted to examine a case that well illustrates this point. The patient has been in my care nearly thirty years. She came to me for her first dental work a Miss of a score of years, with as clean and well-kept a mouth as I have ever seen. Most of the work then done is still in good order, and during that long period I have seen her regularly at intervals of a few months. There is not now and never has been the slightest pathological expression. No inflammatory condition, no tartar or deposits other than those of the most innocent character; these have been promptly removed. The gum tissues have always been quite normal in character, and yet, there has been a gradual gum recession, especially at the posterior portions of either jaw, until the molar roots are exposed for nearly half their length. Since she has been in my care two teeth only have been lost, one extracted to relieve an irregularity, and another, a molar, the victim of caries that began on the denuded portion of the root, and in spite of repeated filling girdled the tooth, and so weakened it that it broke off. My experience teaches me that in this case the gum recession, accompanied by a like recession of the alveolar process, will continue until the teeth are no longer firmly held, and then will be set up a local irritation that will in all probability hasten their loss. This local irritation may assume a pyorrheal condition. Now what can be done in a case like this? We have here a healthy mouth and a healthy patient. Except that before appreciating the importance of dental attention several molar teeth were lost, there has been no neglect of this mouth, either by dentist or patient. Except upon the portions of the roots denuded by gum recession, caries has been effectually arrested. Looking backward and looking forward, I see but little that therapeutics could or can do. The judicious use of antiseptics will no doubt prolong the comfortable usefulness of these teeth, but their loss from causes that to my mind are entirely non-pathological, unless some unlooked for change takes place, is only a question of time.

Let us study more closely this which I have termed normal gum recession. In early life, in a typical healthy mouth, the gum margins form well rounded festoons, covering and extending beyond the junction of enamel and dentine; between the teeth, especially the molars and bicuspids, the gum tissue fully occupies the wedge-shaped interspace, leaving no vacancy for the accumulation of food, etc. As time goes on, shortly after the individual reaches full development, we note a change. The well rounded, easy lines characteristic of youth are no longer seen. There is a contraction of tissue; the features assume a more rigid form, the muscles become more prominent, the child becomes a man. The gums participate in this change, they loose the well rounded margins; they do not so well cover the enamel junction, and little by little there is developed a wedge-shaped space between the teeth. This is practically a recession of the gums. To a greater or less extent it always takes place as the individual advances from youth to age. It is as natural and normal as is the development of the maxillary sinus. This change continues in progress through life; it is only, however, when the change is rapid, or when it becomes excessive, that it attracts attention and its normality is challenged. In many cases it may be so slight as to pass unnoticed; not every octogenarian becomes gray headed or bald.

In the same line we may refer to cases of absorption of the roots and filling up of the alveolar sockets, a process by which many teeth are expelled. The loss of antagonizing teeth frequently promotes this; it does not, however, always follow the loss of antagonizing teeth. At times it occurs without any apparent cause, and is only noticed when the stability of the teeth is compromised. A frequent accompaniment of this is the sharp, needle like points at the apex of the roots, seen only, of course, after extraction. In cases like this, to judge between the normal and the abnormal, to say exactly when the one ends and the other begins requires a close and careful study. To distinguish clearly and assign the effect to local or to systemic causes is another vexed question. So far, I have seen no study upon this subject that has favorably impressed me as being at all thorough or helpful. The time comes in nearly all these cases when a pathological condition supervenes. The pockets between the teeth favor the lodgment of food, etc., the condition of the gum margins favor deposits of various kinds, as a result, the gum margins become unduly susceptible to inflammatory conditions ; or the loss of firmness of the teeth themselves eventually induces an unhealthy condition that must be met and properly treated.

We say " must be met and properly treated," but we are here seriously hampered. Can we cure these cases while the conditions which have caused the trouble still exist ? Is it possible to undo that which has been done ? Is it possible, by any available means, to prevent these changes from progressing ? Frankly, I know of none.

Just as at one period of life an individual may, as we say, *age rapidly*, and later may acquire new vigor, so do these conditions progress rapidly at times, at times remain stationary, and at other times greatly improve ; but can these wasted tooth-sockets or this lost gum tissue be restored ? The susceptibility to inflammatory conditions may be at one time marked, and at another less so, as the result of remedial treatment, or as the result of unknown causes. Our art can do much, but cannot place teeth thus weakened in as good a condition for comfortable usefulness as they formerly were ; in some cases, indeed, we are utterly powerless to hold in check these destructive processes. I see many of these cases. They are not, as I understand it, at least primarily, pyorrhea ; neither are they due to tartar deposits of any kind or character ; neither are they due to neglect on the part of either dentist or patient. They are as inexplicable as are a thousand and one other ailments from which humanity suffers. As soon as it is on the market, I shall prescribe for all such cases frequent and large doses of the elixir of youth ; until then I propose to do for them as I have done, the best I know how with the means at command.

It is not always, however, that this which I have termed normal gum recession becomes pathological. I have seen and see many cases where it is going on steadily without the slightest evidence of any other abnormality than a loss of tooth supporting tissue. I have seen it so progress until the teeth have been dislodged by a slight accidental strain, from sneezing, during mastication, etc. We may here ask, Why do non-antagonizing teeth in some cases elongate and in others not ? We see illustrations of this in the same mouth with no visible reason for the difference. What causes absorption of the roots of permanent teeth ? I have removed many such, generally, but not always, from patients of advanced age, the root portion of which was not half the length they should normally be. Is this an abnormal action, or is it normal ? As an opposite of this, we have various enlargements of the roots, some that do not seemingly impair the usefulness of the teeth, and others again that, directly or indirectly, cause their loss. Again, in the same line we note bony deposits or formations of various kinds within pulp territory. While we may, properly perhaps, assign these causes of tooth-loss to perverted normal activity of the bone formers, it is a vexed question whether the cause of this perverted local activity is local or systemic; and we may, I think, safely say that at present its prevention and largely its control is beyond our power.

Primarily, all these causes of tooth-loss are normal, they are systemic; at times local causes later become a complication. Just where to draw the line between nature, perverted nature and disease is, so it seems to me, an open question.

Where pathological conditions exist, how to decide whether due to local or systemic causes, is indeed at times a vexed question, a very important one, however, as upon this decision intelligent treatment must largely depend. Where a tooth is loosened by a blow, and by the same accident the supporting tissues are so injured that during the process of repair, as a result of associated pathological conditions, the tooth is expelled, we have a typical case of a purely local cause of tooth-loss. On the other hand, the loss of teeth resulting from some such disease as scurvy or the action of some such remedy as mercury furnishes examples of tooth-loss by pathological conditions of a purely systemic origin. Closely allied to the first are cases where, from mal occlusion or from the loss of a number of teeth of the series, certain teeth have imposed upon them an undue share of work. There is apt to be set up in these cases changes that will as surely result in pathological conditions endangering the life of the teeth as do those which result from a sudden blow, although the pathological conditions may be different and the final result much longer delayed. Relieving this undue pressure by mechanical means, correcting the mal-occlusion or inserting artificial substitutes, while still further prolonging the life of the endangered teeth, does not always stop the destructive process, and nothing can undo the mischief that has been done. These suggestions will, no doubt, call to your mind numerous other cases that, in some respects, bear to these a more or less close resemblance.

Now, in these cases the original injury is purely a local one. It may indeed continue purely local until the end. Let us see how easily systemic conditions may step in and control the result.

It is, I think, generally admitted that the oral cavity always contains pathogenic germs. If not always, they are so frequently present, or so liable to be present, that they must always be reckoned with It is also, I think, generally admitted that the secretions of a healthy mouth are inimical to the well being of these germs. That is, if the secretions of the mouth are normal, they are destructive to all these germs exposed to their influence. Now, as the result of systemic conditions, that may perhaps continue for a short time only, the oral secretions may become abnormal, and for the time being to these germs inert. There is always a risk that at such times these germs may find, at some point of local injury, a lodgment where they may be free from the destructive influence of the normal secretion after the period of their abnormality has ceased. Unquestionably, this frequently occurs, and is one of the indirect ways by which local injuries are influenced by unconnected systemic conditions, and may also explain some mysterious cases of ebb and flow in the progress of diseased conditions in the mouth. This, I consider, is the real danger to be feared from accumulations of salivary tartar deposits. They are in themselves rarely hurtful; as a cover and protection to these omnipresent destructive agents, they are in all cases a menace to the well being of the teeth.

Much has been written of late enforcing the importance of keeping the teeth absolutely free from these deposits, much, in my judgment, has been thoughtlessly written. In the first place, in many mouths it is a practical impossibility to maintain this freedom from deposits insisted upon. They are beyond any means the patient can safely employ. They collect so rapidly that nothing short of daily or weekly visits to the office will suffice, and this in a large majority of cases is impracticable. And again, an attempt to carry out so strict a regime would probably prove as abortive of good as did the treatment of alveolar abscess a few years ago, by pumping creosote into the fistula every day, and from the same cause.

Again, we find in many cases the accumulation of salivary tartar is in a measure self-limiting; we find but little more at the end of three months than we find at the end of one. That it is to any great extent the cause of pyorrhea, or a tooth-loss, unless greatly neglected, I do not think. The fact so frequently noticed, now and in the past, that pyorrhea occurs where no tartar is present, and that large neglected accumulations of tartar are present with no pyorrhea, is sufficient evidence that as cause and effect they are not closely related. If its harmfulness was as great as some contend, the number of unhealthy mouths would be vastly increased. As before stated, I consider its hurtfulness is mainly in covering and protecting more potent agents, and practice and urge that every effort be made to keep the teeth as free from it as practicable. It is useless, however, to insist upon impossibilities. It is an open question in those cases where salivary tartar and receding gums are especially marked, whether even here we have an exhibition of cause and effect. We know that gum recession exists without unusual deposits of tartar. We also know that tartar deposits exist without gum recesssion. We still farther know that this tartar is more prone to deposit in places where the secretions stagnate, and that the wasting of gum tissue, especially on the lingual aspect of the lower incisors, form a pocket furnishing conditions favorable to these deposits. Beyond this we do not know. The cause of these deposits, why marked in some mouths and entirely absent in others, why quickly deposited at times and at other times less so, I never have seen explained, nor yet do I recollect any suggested means at all plausible by which their formation may be prevented.

Fouchard, in 1728, following his predecessors, urged their frequent removal, and in this year of grace 1896, we seem to have no better method, notwithstanding the progress which our science is supposed to have made during the intervening one hundred and sixty-eight years.

In the so-called sanguinary tartar we have another mystery, and here again we are puzzled to know whether it is the cause or result of the lesions usually associated with it; and here again we find our science has failed to make any material advance since the days of Hunter and Berdmore. Is this peculiar deposit the result of local or systemic causes? What determines its formation in some cases as a ring, to a greater or less extent encircling the neck of the tooth just beneath the gum margin, in others encroaching to a greater or less extent over the surface of the root, either as a continuous coating or in detached crystal-like bodies? Who can tell? Indeed, who can tell whether it proceeds or follows that break of continuity, an invariable accompaniment of its presence, between the periosteum of the root and that of the alveolar socket, a break of continuity that is seldom if ever healed.

Between salivary and sanguinary tartar there is this very marked difference, the first forms over the gum tissue, seldom encroaching, unless there is a marked pre-existing lesion, between the tooth root and the gum; the latter is always found beneath the gum tissue, and between it and the root, in many cases under conditions that suggested it to have been the cause of the space it occupies.

They appear to be quite independent the one of the other; either may be found quite alone, or they may be so closely associated and blended that it is difficult to decide where the one ends and the other begins. Indeed at times we are at a loss to decide whether the deposit is of salivary or sanguinary origin. So far as I know, we have no suggestion for its removal other than by mechanical means. To a slight extent various agents, so called solvents, appear to assist in its removal, not, I think, because of any solvent action upon the tartar itself, but by breaking up its attachment to the root. I question very much whether any agent exercises over it, under the circumstances under which it must necessarily be used, any real solvent action. So far as prevention is concerned, I recall no suggestion promising practical value. Treatment recommended is for the most part local. First, the mechanical removal, so far as is possible of the deposits, followed by astringents and antiseptics. All agree that constant watchfulness and care is necessary to prevent a relapse. Of the two forms of tartar deposits, this is by far the most to be feared. It strikes at once a part vital to the continued usefulness of the tooth, and opens a path to deep-seated germ infection exceedingly difficult to combat. It is a very serious cause of tooth-loss, and one exceedingly difficult to control.

I presume a volume might be written upon this interesting subject; but before that can be usefully done, there is a great deal of supposed knowledge that must pass from the theoretic to the practical stage. Until we know more of *the power behind the throne*, attempts to treat many conditions that appear to be of systemic origin will continue to be merely empirical, and in the meantime, perhaps, we will do better to intelligently use those local means that have been found of benefit. Little by little close and patient study will do much in the future as it has done in the past, to enlarge the opportunities of our science in curtailing tooth-loss from these as from other causes. Those acquainted with the writings of Hunter and Berdmore and others of that period, will note that in treating these conditions, our profession has made but little advance. We have improved and more delicate instruments; we have acquired perhaps more manipulative skill; we have decidedly more effective therapeutic agents. Beyond this, I am impressed the advance is but trifling.

So far as preventive means are concerned; so far as the real knowledge of the why and wherefore of their presence is concerned, a century and a quarter between their day and ours has borne but little fruit. It seems to have been so far a sterile or a neglected field.

Of the systemic conditions that act directly upon the tissues concerned in supporting the teeth, but little need be said. They are for the most part well known and easily recognized. The so-called scurvy in its various forms; syphilis; the various nerve or brain disorders, as for instance locomotor attaxis; malaria or the effects of potent drugs; or the more subtle effects of wasting diseases, are to all well informed practitioners a well known song. Of late attention has been called to a systemic condition heretofore scarcely suspected that is supposed to be the cause of much trouble and of serious tooth loss. I allude to the gouty or uric acid diathesis. The theory is, that at times uric acid is set free and circulates in the nutrient system; that this uric acid has a tendency to localize at certain points, and when thus localized may prove a serious irritant. It is credited with at times causing rheumatism, at times peculiar skin diseases, at times combining with other elements and forming concretions, notably at the joints. Just how it affects the teeth does not seem to be well understood, possibly the most plausible theory is that suggested by Dr. E. C. Kirk, of Philadelphia. He suggests that the uric acid is inert to normal tissue, but as it circulates with the blood current, on reaching territory slightly irritated, it is liable to localize and prove a decided irritant. A primal dental irritation, perhaps of itself of no moment, may be sufficient to detain from the circulation a small portion, a mere atom of uric acid, that would otherwise harmlessly pass by. Its presence increases the irritation, and as a result we have a pathological condition, a pathological condition that may continue long after the uric acid which really caused it, has disappeared.

In a thousand and one ways, a cold, an accident during mastication, the constant impact of occlusion, etc., may be received the primal irritation in the surroundings of a tooth that invites this mischievous agent. Just what form the final irritation may assume depends largely upon circumstances. Should it be near the apex of the root and the surrounding tissues normal, we may have one of those mysterious abscesses of which we have so long read, an abscess upon a vital tooth. It may be slight and run so benign a course that its dental origin is not suspected; or it may be of so serious a character that several neighboring teeth may be purposely devitalized, one after the other, on the supposition that they are responsible. It is a peculiarity of abscesses from this cause, that while they follow the usual rule of reaching the surface through tissues of least resistance, they are apt to reach the surface at a point remote from the seat of injury. So firmly fixed is the idea that a dental abscess must have associated with it a devitalized pulp, there is no question but that the usefulness of many teeth have been impaired, and many extracted in the effort to relieve an abscess of this character. It is so recent that attention has been called to this that we can hardly as yet define the diagnostic differences between an abscess of uric acid origin and one resulting from a devitalized pulp; it is well, therefore, to always consider this before drilling into a tooth apparently vital. I say apparently vital, for notwithstanding the many suggested rules for determining whether a tooth is vital or not, there are cases where the question of vitality can only be settled by the drill. It is better to first treat by palliative means all doubtful cases.

Again, it has been suggested that uric acid has much to do with those forms of tartar deposit usually classed as sanguinary.

It has been suggested that such deposits may find lodgments upon the tooth root near its apex, the tissue between the point of deposit and the gum margin being quite normal. It has been suggested that germ infection may take place under these conditions, giving rise to deep seated pyorrhea. While it is by no means improbable, it requires still further study before acceptance. I have been impressed that the uric acid abscess usually discharges a serum rather than pus; that the discharge is less in quantity, quickly ceasing, and unless complicated, without leaving a fistula. If these observations be correct, they indicate the absence of that infection always associated with abscess from a devitalized pulp.

Again, the uric acid may cause severe pain of a neuralgic character. It may be confined to one, a few, or may involve all the teeth without exhibiting any visible lesion. I have met with several cases presumed to be of this character from the fact, that the systemic treatment known to be useful in combating the uric acid diathesis gave prompt relief after other means had repeatedly failed.

As suggested by Dr. Kirk, this is perhaps the only evidence we can rely upon in proof of uric acid causing these troubles. Its presence or absence in deposits upon the tooth root is of little moment. as it is found in such deposits not of a pernicious character, and as before remarked, it is quite within the range of possibility that the uric acid really responsible for the trouble, may have been within adjacent tissues and may have passed away before the trouble caused by it is discovered. Failure to respond to treatment is only presumptive evidence, however, of its absence. We have in medicine no absolute specific for any disease. If a suspicious syphilitic case favorably responded to mercury, we are safe in assuming the suspicion to have been correct, while failure to respond leaves us still in doubt.

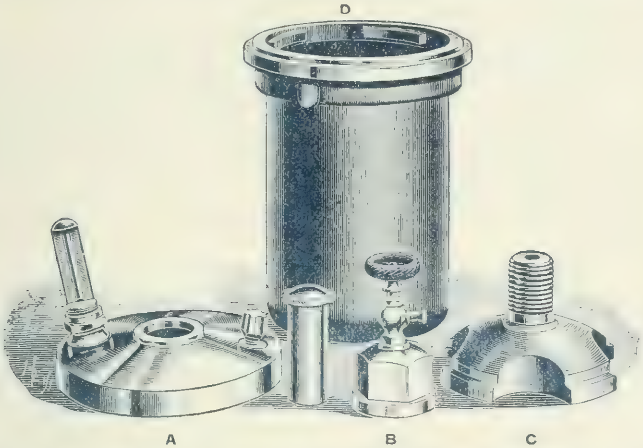
It will probably be some time before we can outline the treatment to be pursued in these cases. Our medical brethren have long worked upon the problem without fully solving it under far more satisfactory conditions than the dentist can ever expect to be favored with. A patient threatened with death or prolonged suffering, is far more tractable than one who sees certain relief by a trifling and painless operation, followed by so slight a subsequent inconvenience as is supposed to be by the uninitiated, associated with wearing an artificial denture. Our patients as a rule are not willing to adopt a restricted diet, or to submit to constant dosing. It is difficult indeed to get them to regularly attend to the mere mechanical routine of the oral toilette with the same care they give to the more visible portion of their person ; a clean, well adorned face and neglected teeth are not uncommon among those we recognize as regular patients. Whether the dentist is called upon to act the part of a lady's maid or a gentleman's valet, in doing for their patients that which they are quite as well able and can better do for themselves, is a question each must decide for himself. Important as are the menial offices around the sick bed, except in an emergency, it is no part of the medical attendant's duty to perform them. He can, as we can, direct and advise. The power, however, to compel obedience is limited, ours more so than his. Patients are not as a rule the pliable things some of our writers would have us believe.

While our profession has fairly well compassed the prolonged usefulness of teeth endangered by caries, the other causes of tooth-loss still baffle our skill. Let me suggest in closing that careful, thoughtful study of these cases and earnest work in the effort to reach the initial lesion and trace its progress may do much in lessening tooth-loss from causes other than caries.

## A VALUABLE HINT.

To those who use the "Lyon Vulcanizer" we would offer the following simple and valuable hint : After the flask is introduced into the pot D, the clamp C inserted and the cover A set in place, before screwing down the cap B, *sprinkle the packing of this with finely powdered soapstone or French chalk.* This is readily and evenly done by turning the cap B upside down. It is then screwed down and the gas lighted. We suggest this, as we have found the sprinkling of soapstone in the place we have indicated, much facilitates the opening. The soapstone should be used fresh, each time, and the old nicely brushed off as, if left, it will form a cake and defeat the object.

While speaking of this vulcanizer we must give it our hearty endorsement. We have never had a vulcanizer which gave us so much satisfaction and so little trouble. It never leaks, and we have observed there is an entire freedom from the scale which collects in copper pots. Being made, as this is, of "gun metal," may be the reason of this. Since we have been using it we have never had a porous plate. This may be attributed to the degree of heat we have employed to vulcanize. We rarely permit the mercury in the thermometer to register more than 280° to 300° degrees, and we keep it at this temperature for 1½ hours, after the mercury reaches this point. The vulcanizer will accommodate *three cases*, but we prefer to vulcanize "in steam," and for this purpose we set the flask or flasks, on the ring of an old flask placed on the bottom of the pot and only put about a teacup of water in the pot, just sufficient to about cover this ring.



The vulcanizer is the easiest to manipulate. When the cases are vulcanized it is only necessary to blow off the steam, unscrew the nut or cap B, take off the cover A and the clamp C, and the machine is ready for other cases.

[TWENTY-SEVENTH PAPER.]

# LEADING QUESTIONS AND ANSWERS FOR DENTAL STUDENTS.

By Theodore F. Chupein, D.D.S., Philadelphia, Pa.

Q Does tartar have any injurious effect on the teeth?

A. It does not; on the contrary, we find those portions of the teeth which are covered by tartar preserved from decay, and it has been noted that decayed places in the teeth which became covered with this deposit seemed to have been arrested from the further incroach of caries. This may have given rise to the opinion sometimes entertained that it should not be removed.

Q. Is this not a good argument for its non-removal?

A. No, because such cases as we have instanced are not general but only occasional, and as the presence of the deposit is always pernicious, by the loosening of the teeth, the irritation of the gums, the fetor of the breath, the gradual destruction of the alveolar process, the tartar should be removed.

Q. Are these the only arguments brought forward for the removal of the tartar?

A. No other effects are produced by its presence. Tumors of the gums; excrescences of the gums; a flabby hypertrophied condition of the gums; necrosis and exfoliation of the bones of the jaw hemorrhage of the gums; derangement of the digestive apparatus; catarrh; cough; diarrhœa; diseases of the maxillary sinus and nose; pains in the ears; headache; melancholy; a disposition towards hypocondriasis; anorexia, etc.

Q. What is Anorexia?

A. It means a loss, or diminution of appetite, sometimes amounting to an aversion of food.

Q. How does the presence tend to loosen the teeth?

A. It is deposited on the teeth little by little, forcing the gums away from them; and its irritating presence causing the absorption of the bone or alveoli. The teeth are thus deprived of their natural sockets and supports, having little to retain them in their positions and thereby become extremely loose.

Q. Are these results always present?

A. No, sometimes the presence of tartar on the teeth causes no inconvenience, nor does it always produce the sequences we have enumerated; the temperament of the individual, the state of the general health, the quantity and consistence of the deposit, have much to do with the extreme cases we have noted.

Q. What should be impressed on patients where the tartar shows a disposition to deposit in large quantities?

A. The observance of great cleanliness, and the having the deposit frequently removed?

Q. What more may be said of tartar?

A. Almost as many teeth are lost by the permission of the accumulation of tartar as by caries. The gums become so sore from its presence that the proper care and cleanliness are not observed and performed, because of the pain inflicted. In this way the accumulation increases in great proportions, and tooth after tooth loosens and falls out; besides this, a feted discharge occurs around the teeth, or deposit, this mixes with the food and is swallowed and taken into the stomach, disarranging the digestive functions and contaminating the breath to such a degree that sometimes the whole apartment becomes impregnated by the insufferable odor.

Q. How may the removal of the tartar from the teeth be regarded?

A. As an operation of great importance to the teeth as well as to the general health.

Q. Do patients generally consent to the operation?

A. No. Through motives of fear of pain, the opinion, (even among persons well informed) that since nature put it there that it should not be removed, the feeling of strangeness or a little roughness when it is first removed, and other erroneous ideas, many patients object to its removal.

Q. How should these opinions be refuted by the Dentist?

A. That it is an operation which causes no pain whatever, that it is as silly to bring forward the argument that "since Nature put it there it should remain and not be removed," as to say that the finger nails should not be cleansed or that the face and hands should not be washed because of the deposit of dirt, or the body should not be bathed to remove the epithilial scales thrown off on the surface of the skin which would ultimately close the pores, or any argument against cleanliness.

Q. Should any roughness be felt on the teeth after the removal of the tartar?

A. There should be no roughness felt on the teeth. The roughness indicates that all particles of tartar have *not* been removed. The teeth should be left perfectly smooth after the operation.

Q. Is this always possible?

A. It is when thoroughly done. The free flow of blood interferes with the operation, but after the first sitting a better sight can be obtained.

Q. Is there any way of preventing the flow of blood so as to complete the operation thoroughly?

A. It has been proposed, after the bulk of the tartar has been removed on the first sitting, to apply the rubber dam over all the lower teeth, (these being more frequently encrusted) and then by working the rubber dam down on the necks of the teeth and ligating each tooth, every nodule of tartar is exposed and the operation may proceed without the interference of the blood.

Q. How is the operation performed?

A. By the aid and use of instruments called "Scalers."

Q. How are these constructed?

A. With narrow sharp and thin blades, bent at different angles, so as to readily approach the places where the deposit adheres to the teeth.

Q. How are the blades made?

A. With "push" or "draw" cut edges so that the deposit may be pulled off or pushed off.

Q. How is the tartar removed?

A. When it is excessive, covering, as it sometimes does, the entire lingual surfaces of the lower front teeth, so as to completely obliterate their form, the tartar may be first broken away with any form of enamel chisel that will apply. These particles are then removed from the mouth by rinsing with water. The scalers are then gently insinuated beneath the deposit and peeled or scraped off by an upward pull, if on the lower teeth. One by one the teeth are thus cleaned. Sometimes the tartar is very firmly adherent and the pull fails to dislodge it. A push scaler should then be tried, as sometimes this force will remove it easily where the pull force was ineffectual. Blood flows very freely and profusely during the operation necessitating the constant rinsing of the mouth to be able to see the remaining nodules. Sometimes, when the bulk of the deposit is removed, it will be necessary to dismiss the patient for another sitting on account of this excessive flow of blood; but in case this is inadmissible, it has been proposed to punch and apply the rubber dam over all the teeth which are to be cleansed, and in this way dam off the blood and thoroughly cleanse the teeth of all deposit.

Q. What style instruments would you use for the purpose?

A. Thin, small-bladed delicate instruments are best suited for the operation, some with their blades made for scraping with "a draw motion," others with their blades made with "a push motion." The blades, at their widest diameter, should not be more than one-sixteenth of an inch wide, gradually tapering to a fine point, and with a bevel by which they are readily kept sharp. Others should be in the form of the "Sickle" and quite thin, so as to pass readily between the teeth. In removing the tartar from the lower oral teeth, the deposit is readily seen and attacked by having the patient open the mouth well, the operator standing behind the patient, and by means of the mouth mirror shining reflected light on the teeth. The mirror while it aids in this, also assists in keeping the patient's tongue away from the surfaces operated on. This position of the operator, at the back of the chair is not always practicable. He will be obliged sometimes to stand at the side and partly in front of the patient, on account of the inability of the patient to open the mouth wide or of the conformation of the jaws, working on the lingual surfaces of the teeth by the reflected light of the mirror.

Q. What is particularly recommended in this operation?

A. That every particle of tartar be removed, and that the cleansed surfaces be afterwards gone over by means of the small polishing brushes, used in a suitable mandral, in the hand-piece of the dental engine.

Q. Are any other means used for the removal of tartar than instruments?

A. Chemical agents have been used and suggested, such as mineral and vegetable acids.

Q. Would not these agents, especially the mineral acids act on the teeth as well as the tartar, if used?

A. This is probable, yet only such of these acids are employed, as are known to have less affinity for tooth substance than for tartar. In the removal of this deposit the use of such agents should be avoided.

[TO BE CONTINUED.]

## NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The thirteenth annual meeting of the National Association of Dental Faculties was held at the Grand Union Hotel, Saratoga Springs, commencing August 1, 1896.

The following colleges were represented:

*Birmingham Dental College*—T. M. Allen.

*University of Denver, Dental Department*—W. E. Griswold.

*Columbian University, Dental Department*—H C. Thompson.

*National University, Dental Department*—J. Roland Walton.

*Atlanta Dental College*—Wm. Crenshaw.

*Southern Medical College, Dental Department*—Frank Holland.

*Chicago College of Dental Surgery*—T. W. Brophy and Louis Ottofy.

*Northwestern College of Dental Surgery*—L. L. Davis.

*Northwestern University Dental School*—Theo. Menges and Geo. H. Cushing.

*Indiana Dental College*—G. E. Hunt.

*Louisville College of Dentistry*—Francis Peabody.

*Baltimore College of Dental Surgery*—B. Holly Smith.

*University of Maryland, Dental Department*—F. J. S Gorgas.

*Boston Dental College*—J. A. Follett.

*Harvard University, Dental Department*—Thos. Fillebrown.

*University of Michigan, Dental Department*—J. Taft.

*Detroit College of Medicine, Dental Department*—G. S Shattuck.

*University of Minnesota, College of Dentistry*—Thos. E. Weeks.

*Kansas City Dental College*—J. D. Patterson.

*Western Dental College*—D. J. McMillen.

*Missouri Dental College*—A. H. Fuller.

*University of Buffalo, Dental Department*—W. C. Barrett.

*New York College of Dentistry*—Frank Abbott.

*Cincinnati College of Dental Surgery*—W. T. McLean.

*Ohio College of Dental Surgery*—H. A. Smith.

*Cleveland University of Medicine and Surgery, Dental Department*—S. B. Dewey.

*Western Reserve University, Dental Department*—H. L. Ambler.

*Pennsylvania College of Dental Surgery*—C. N. Peirce.

*Philadelphia Dental College*—T. C. Stellwagen and S H. Guilford.

*University of Pennsylvania, Dental Department*—E. C. Kirk.

*University of Tennessee, Dental Department*—J. P. Gray.

*Vanderbilt University, Dental Department*—A. W. Morgan and W. H. Morgan.

*University College of Medicine, Dental Department*—L. M. Cowardin.

*Royal College of Dental Surgeons of Ontario*—J. B. Willmott.

The following colleges were elected to membership:

*Howard University, Dental Department, Washington, D. C.*—James B. Hodgkin.

*Marion Sims College of Medicine, Dental Department, St. Louis, Mo.*—J. H. Kennerly.

*Dental Department of Tennessee Medical College, Knoxville, Tenn,*—R. N. Kesterson.

The following applications for membership were reported favorably by the Executive Committee for final action next year:

University of Omaha, Dental Department, Omaha, Neb; Ohio Medical University, Dental Department, Columbus, O; Baltimore Medical College, Dental Department, Baltimore, Md.: Dental Department of Milwaukee Medical College, Milwaukee, Wis.

The New York Dental School announced its intention to complete its application next year.

The report of the secretary stated that there were in the United States fifty-three institutions teaching dentistry or conferring the dental degree, as follows: Dental schools in active operation, forty-six; organized during the year, two; in course of organization, one; corporations conferring the dental degree, four. Of the dental colleges, thirty-six were now members of the association, eight had applications for membership pending, two had signified their intention of applying, and the two newly organized have announced in their catalogues their intention to comply with the rules of the association.

The report of the Committee on Schools, presented by its chairman, Dr. Follett, stated that reports had been received from thirty-five schools as to their equipment under the resolution adopted last year. These reports showed that the schools were well provided with lecture-rooms, and in most instances with ample laboratory and dispensary accommodations, with sufficient and appropriate appliances. They indicate a broadening in the general course of instruction, as well as fuller courses in all departments. Several colleges have recently added courses in bacteriology and extended their work in histology and pathology in practical ways. During the year 1895–1896 the number of matriculates at the thirty-five colleges reporting was 5532; graduates, 1363.

Mr. Melville Dewey, secretary of the Board of Regents of the University of New York, appeared before the association by invitation of some of the members, and gave a masterly address on the needs of the movement for higher education in professional ranks. Incidentally, Mr. Dewey explained some of the details of the system pursued in New York, and stated that, greatly to the surprise of those in charge of the various professional educational institutions in the state, the number of students had steadily increased since the higher requirements had been put into force by the Board of Regents.

Among the more important legislation enacted by the association were the following:

### REGULATING THE ADMISSION OF STUDENTS.

#### *Preliminary Examination.*

The following preliminary examination shall be required of students seeking admission to colleges of the association:

——————— HIGH SCHOOL.

——————— 189

To the Faculty of————

M —— —— desires to present ——self as a candidate for admission to the Course of Dentistry, —— ——

He has pursued in this school the branches against which numbers appear—the numbers being the standings upon a scale of 100. Our course requires five recitations or exercises weekly, in each branch. Our terms are ten weeks in length.

#### PRELIMINARY.

2 terms Orthography, standing.
2 terms Reading, standing.
2 terms Writing.
2 terms Arithmetic.
2 terms Geography.
2 terms Grammar.
2 terms History U. S.
—
14

These are required in all cases, and fourteen counts given for the same.

#### ELECTIVE.

3 terms University Algebra, through Quadratics.
3 terms Geometry, plane and solid
2 terms Physiology.
2 terms Physical Geography.
1 term Botany, with analysis of forty plants.
3 terms General History.
3 terms Natural Philosophy.
3 terms English Literature.
2 terms Civil Government.
2 terms Rhetoric.
2 terms History of England.
3 terms American Literature.
3 terms Chemistry.
1 term Commercial Arithmetic.
2 terms Astronomy.
2 terms Geology.
2 terms Natural History.
1 term Political Economy.
2 terms Drawing.
3 terms German.
3 terms Greek.
3 terms Latin Reader, Cæsar.
3 terms Cicero, four orations.
3 terms Virgil, six books.
1 term Book-keeping.
3 terms French.
2 terms Manual Training.

(After session of 1901–1902 U. S History becomes elective, and entitles to 2 credits.)

#### FOR THE SESSION OF 1897–98.

| | |
|---|---|
| Preliminary . . . . . . . . . . . . . . . . . . . . . . . . . . | 14 counts. |
| Elective . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 18 counts. |
| Total | 32 |

#### FOR THE SESSION OF 1898–99, 1899–1900.

| | |
|---|---|
| Preliminary . . . . . . . . . . . . . . . . . . . . . . . . . . | 14 counts. |
| Elective . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 27 counts. |
| Total | 41 |

### FOR THE SESSION OF 1900-01.

| | |
|---|---|
| Preliminary | 14 counts. |
| Elective | 36 counts. |
| Total | 50 |

For the session 1901–1902 and thereafter no Preliminary credits; forty-eight credits from the studies classed as elective.

When the text-book mentioned has not been completed, the exact amount of work done should be stated.

The candidate above-named is recommended as of good moral character, studious habits, and, judging from the past records, able to carry forward the work of a dental college course.

The rules for the admission of students take effect with the session of 1897–8.

—— —— Principal.

### ADMISSION TO ADVANCED GRADES ON CERTIFICATES.

The colleges of this association may receive into the advanced grades of Juniors and Seniors only such students as hold certificates of having passed examinations in the studies of the freshman or junior grades respectively, such certificates to be pledges to any college of the association to whom the holders may apply that the requisite number of terms have been spent in the institutions by which the certificates were issued.

### INTERMEDIATE CERTIFICATE.

Place Date

This certfies that —————— has been a member of the ——————

class in the —————— during the term of ——————

He was examined at the close of the term in the required studies, as stated herein, and is entitled to enter the

| Freshman Year | Junior Year. |
|---|---|
| [List of Studies ] | [List of Studies.] |

This certificate shall by correspondence be verified by the dean of the college by which it was issued. Without such certificate no student shall be received by any college of this association for admission to the advanced grade, except on such conditions as would have been imposed by the original school, and these to be ascertained by conference with the school whence he came.

### LIMITING THE TIME FOR THE RECEPTION OF STUDENTS.

No member of this association shall give credit for a full course of students admitted later than ten days after the opening day of the session, as published in the announcement.

In case one is prevented by sickness, properly certified by a reputable practicing physician, from complying with the foregoing rule, the time of admission shall not be later than twenty days from the opening day.

In cases where a regularly matriculated student, on account of illness, financial conditions, or other sufficient causes, abandons his studies for a time, he may re enter his college at the same or subsequent session, or where under similar circumstances he may desire to enter another college, then with the consent of both deans he may be transferred, but in neither case shall he receive credit for a full year unless he has attended not less than seventy-five per cent. (75%) of a six months' course of lectures.

### ATTENDANCE, EXAMINATIONS.

Attendance upon three full courses of not less than six months each in separate academic years shall be required before examination for graduation. The year shall be understood to commence August 1, and end the following July 31.

Beginning with the session of 1896–1897, the examinations conducted by the colleges of this association shall be in the English language only.

A student who is suspended or expelled for cause from any college of this association shall not be received by any other college during that current session In case the action of the first college is expulsion, the student shall not be given credit at any time for the course from which he was expelled. Any college suspending any student shall at once notify all other members of this association of its action.

### APPLICATIONS FOR MEMBERSHIP.

Applications for membership in this association shall be made in writing, favorably indorsed by the faculties of two or more colleges of the association and the board of dental examiners of the state in which it is located.

Such application shall then be referred to a special committee of three which shall be appointed by the chair upon each application. The duty of this committee shall be to visit the school applying during its session, personally examine its facilities for teaching, methods of instruction, and efficiency of the faculty, and report to the executive committee, which report shall, if favorable, be acted upon.

Each application shall be accompanied by a sum of money sufficient to defray the expenses of the special committee.

The constitution was so amended that hereafter it will require a two thirds vote instead of a majority to elect new members.

The following resolution, offered by DR. PEIRCE, was on motion adopted :

WHEREAS, In view of various reports frequently being circulated derogatory to the character of certain schools without any one being willing to prefer charges sustaining such statements,

*Resolved*, That the Executive Committee be and is hereby authorized to exercise full power to investigate all such innuendoes or charges by visiting the school or schools, or authorize some one to perform this duty ; summoning witnesses, etc., in order that all such statements shall be sustained or proven false.

*Resolved*, That a sum to be determined by the officers, president, secretary, and treasurer, be and is hereby appropriated for the purpose of paying expenses essential to the carrying out of the provisions of the above resolution.

The following communication from the National Association of Dental Examiners was read and on motion adopted :

*Resolved*, That this association requests the National Association of Dental Faculties to enact a rule prohibiting colleges from receiving beneficiary students recommended by state boards and associations.

The following, offered by DR. ABBOTT, was adopted :

*Resolved*, That the committee of three appointed by the chair to report on applications for membership shall determine and report to this association at its next meeting the minimum requirements of such colleges as desire to become members of this association as to length of course, plant, equipment, facilities for teaching, and the number and efficiency of its faculty.

DR. BROPHY offered the following, which was adopted :

*Resolved*, That a graduate of a recognized dental college, who applies to a college of this association for the degree of Doctor of Dental Surgery or Doctor of Dental Medicine, shall complete one full course of instruction in said college and comply with all other requirements of the senior class.

The following lie over till next year for final action :

Offered by Dr. Barrett :

*Resolved*, That after the regular session of 1897–98 the annual college term for the members of this association shall be seven full months.

*Resolved*, That it is advisable that the National Association of Dental Faculties in future meet in connection with the National School of Dental Technics at a time of year when the colleges are in session, and before the time for the issuance of the annual catalogues.

A committee, consisting of Drs. Patterson, H. W. Morgan, and Kirk, appointed to consider the advisability of adopting the academic cap and gown for commencement day, reported in favor of adopting the intercollegiate system and in favor of lilac as the distinguishing color for dental schools. Laid over till next year.

The following were elected officers for the ensuing year : J. P. Gray, Nashville, Tenn., president; Truman W. Brophy, Chicago, vice-president; Louis Ottofy, Chicago, secretary; Henry W. Morgan, Nashville, Tenn., treasurer ; J. Taft, Cincinnati, Thomas Fillebrown, Boston, and B. Holly Smith, Baltimore, Md., executive committee : H. A. Smith, Cincinnati, Thomas E. Weeks, Minneapolis, and J D. Patterson, Kansas City, Mo., *ad interim* committee.

The newly elected officers were installed, and the president announced the standing committees as follows : S. H. Guilford, Philadelphia, Pa., J. B. Willmott, Toronto, (Canada), Theodore Menges, Chicago, Ill., L. M. Cowardin, Richmond, Va., and James Truman, Philadelphia, Pa., committee on text-books ; J. A. Follett, Boston, Mass., G. E. Hunt, Indianapolis, Ind., C. N. Peirce, Philadelphia, Pa., A. H. Fuller, St. Louis, Mo., and D. J. McMillen, Kansas City, Mo., committee on schools.

Adjourned.

## PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS.

1408 Pine St., Philada., Pa., Oct. 14th, 1896.

At the annual meeting of the Pennsylvania Association of Dental Surgeons, held on the evening of the 13th October, the following officers were elected to serve for the ensuing year :

President—Naaman H Keyser.

Vice President—Rupert G. Beale.

Recording Secretary—Theodore F. Chupein.

Treasurer—Wm. H. Trueman.

## NEW JERSEY STATE DENTAL SOCIETY.

Editor "DENTAL OFFICE AND LABORATORY":

At the twenty-sixth annual meeting of the New Jersey State Dental Society, held at Asbury Park, N. J,, July 29th to 31st, inclusive, the following named officers were elected:

President—Harvey Iredell, D.D.S., New Brunswick, N. J.
Vice-President—J. L Crater, D D.S., Orange, N. J.
Secretary—Charles A. Meeker, D.D.S., Newark, N. J.
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## BOOK NOTICE.

EXTRACTION OF THE TEETH. By I. F. Colyer, L. R. C. P., M. R. C. S., L. D. S. Dental Surgeon and Lecturer on Dental Surgery to Charing Cross Hospital; Assistant Dental Surgeon to the Dental Hospital of London. London: Claudius Ash & Sons, Limited, 5, 6, 7, 8 and 9 Broad Street, Golden Square, W. 1896.

We have received this little manual from the publishers and commend it to the perusal and study of the student. It contains many practical suggestions, as also well executed illustrations on the manner of holding the forceps; the position of the operator and patient; advice as to the proper instruments to use; preliminary observations as to how to extract, etc., etc. It is well written and to the point.—ED.

## ANNOUNCEMENT.

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THIRTY-FIRST ANNUAL ANNOUNCEMENT AND CATALOGUE OF THE MISSOURI DENTAL COLLEGE, ST. LOUIS. Session of 1896–97.

## "THE ITEMS OF INTEREST."

Our old contemporary, the "Items of Interest," has changed hands, having been purchased from the "Wilmington Dental Mfg. Co." by the "Consolidated Dental Mfg. Co.," of New York. Dr. R. Ottolengui has been placed at the head of its editorial department. Dr. Ottolengui promises much in the conducting of the journal, and is determined to make the magazine second to none in point of interest and value of any dental journal published. We wish him " *un envio prospereux*" with the hope that he will be abundantly able to fullfil all his desires and promises.—Ed.

## WELCH'S MONTHLY.

"Our *new* contemporary comes to us almost in the *old* dress of the " Items of Interest." Indeed, at a cursory glance we thought we were receiving the latter journal. "Welch's Monthly " seems—from its first number—to be conducted on the same principles as the older journal, containing the same number of short articles—so acceptable to the busy dentist—which are selected with care and a thorough understanding of the wants and inclinations of its readers. The first number contains an excellent likeness of its venerable editor. We accord to our contemporary our best wishes.—Ed.

## SELECTED ARTICLES.

### THE USE OF SULPHURIC ACID IN THE TREATMENT OF ROOTS FOR IMMEDIATE FILLING.

BY CHAS. WELCH, D.D.S., WILMINGTON, O.

[Read before The Ohio State Dental Society, December, 1894.]

Last year I was accused of bathing in sulphuric acid, which I deny, but every nerve canal that is treated by me is bathed in it.

You want to know of my success? Under what conditions to expect a failure? How many I have treated? Manner of treatment? What teeth they were? Age of patients? What is accomplished in the way of cleansing, and in the stopping of hemorrhage? Is there any danger in allowing the acid to go through the apical foramen?

You remember Dr. Callahan's most able paper on this subject at our last meeting. He recommended the use of sulphuric acid in the opening of difficult root canals, but for straight and unobstructed ones used " Gates-Glidden drill." We now, after a year's successful experience, use the sulphuric acid in every case, thanking Dr. Callahan for the first thought or suggestion of this most useful aid to the profession.

Since December 11th, 1893, I have treated one hundred and three cases, and strange though it may seem, have been successful in every one of them. I filled every tooth immediately after using the acid fifty per cent. aqueous solution, excepting in cases of blind abscess with pus in the root canal. In those cases, after having cleansed the canal with acid, fill it with glycerine and iodoform made into a thick paste, leave it a week, then remove and fill permanently. That is the only condition I have found that you cannot fill immediately. I have used this treatment upon every tooth in the mouth, without an exception as a matter of experiment. Ages of patients ranging from fourteen to seventy-five years. Under every condition from a recently extracted live pulp to a chronic abscessed tooth.

In cases of hemorrhage in root canals sulphuric acid will always check it so you can fill immediately.

My manner of treatment is: First, apply the rubber dam. Open the pulp chamber freely, take with pliers a pledget of cotton soaked in sulphuric acid, and place it in the chamber. With a No. 5 Donaldson Canal Cleanser, pump the acid into the canal to the apex of the root. You may know when you have reached the apex by the patient complaining of pain. No trouble will arise by the acid going through the foramen. You know how dangerous it is to force a nerve broach through the foramen of any devitalized tooth, how soon you will have an alveolar abscess, but by using sulphuric acid, first on a pledget of cotton, it precedes the canal cleanser and kills the bacteria preventing this trouble.

Second. With a drop-tube flood the chamber with a saturated solution of bicarbonate of soda, which by the formation of carbonic acid gas throws out the debris, neutralizing the gas, at the same time cleanses and apparently whitens the tooth. Then dry thoroughly with a five per cent. solution of pyrozone foiled by hot air.

Third. With a minim syringe flood the canal with carbonic acid and iodine equal parts, followed by iodoform and glycerine which I force through the root. Then use chlora-percha with a gutta-percha point, which finishes the treatment, and the tooth is ready for a permanent filling.

## THE PRACTICAL PLACE.

### Solder for Platinum Crowns or Bridges on which Porcelain is Fused.

The addition of a few grains of platinum to pure gold makes a solder upon which pure gold will readily flow. Upon small work it is well within the compass of the laboratory blow-pipe, and I find it, on account of its high fusing, rather safer in the porcelain furnace.—William H. Trueman in *Dental Cosmos*.

### ALLOY AND CEMENT FOR FILLING.

Procure good alloy and cement; mix the alloy as dry as will work well; press into a flat button, the thickness of a silver dime for an ordinary cavity. Mix the cement so as to bring it to its stickiest condition; then, the cavity having been dried and kept so, fill with the cement, and quickly, before it begins to set, press on to it a plate of amalgam about the size of face of exposed cement. Press this plate into the cavity, allowing cement to escape slightly at all parts so far as practicable. With the ball end of very small burnishers perfect the union of amalgam to the edges of the cavity, and then contour by the addition of necessary amalgam. Experience with this plan for over eleven years gives me such faith in it that I have not filled a single cavity with amalgam without the cement for five years past, and I believe the time will come when the use of amalgam without some such lining of the cavity will be considered malpractice.

This use of cement saves much discomfort to the patient from making undercuts or retaining points; also from thermal changes, and other advantages enumerated above.—*W. E. Driscoll.*

### PREPARING THE CAVITY FOR FILLING.

Remember thoroughness in preparing a cavity for filling is the first desideratum. A filling to last, must have a cavity perfectly prepared.—*G. O. Whittaker.*

### SETTING CROWNS WITH CEMENT.

Before setting the crown, wipe the gum around the root with a solution of the perchloride of iron, which will prevent weeping, protecting the cement till crystallized.—*E. L. Custer.*

### PULP DEVITALIZATION.

Secure a free exposure of the pulp, to be able to see it and to allow space for the congested or inflamed pulp. Use the pure crystal arsenic, scraping a very little of it into very fine powder. Twist a piece of cotton the size of a pin head on a smooth nerve instrument, so loosely that it can be easily detached. Moisten the cotton with carbolic acid and take up as much of the arsenic as will adhere and place on the exposed pulp without pressure. Cover the concave metal disk resting on the walls of the cavity. Fill over this with gutta-percha and dismiss for five, six or seven days, when the pulp will be found tough and leathery, so that it can be removed without pain except where it separates at the foramen.—*Frank French, Den. Prac. and Ad.*

### GUTTA PERCHA.

Professor Gray has recently adopted a very satisfactory method of using gutta-percha. After drying the cavity, he saturates it with common resin cut in chloroform and then presses in heated gutta-percha. It adheres to the wall like cement and does not pull away. He has found it very satisfactory in the mouths of his own children, where he has the opportunity of observing it closely.—*Dental Register.*

### TO REDUCE PULP INFLAMMATION.

Place in the cavity, on a loose pledget of cotton, bicarbonate of soda, and saturate the surrounding parts with chloric ether. Leave in place from a half hour to a day, according to extent of inflammation. After this there is less liability of pain from the application of arsenic, and the application will be more effective.—*Dr. Williams in International.*

### PERIOSTITIS.

The following from the *International*, was presented at the American Academy of Dental Science by Dr. Bradley:

"Where there is evidently periostitis coming on after the filling of a pulpless tooth, I have prescribed a slight cathartic in the first stage. and if there is no beneficial effect from that, I have then prescribed a pill made of one grain of opium and two grains of camphor. I invariably divide the pill and give the patient one-half the quantity, to be taken when in bed and prepared to go to sleep; if they are not asleep in one hour they must take the other half of the pill, and I must say that I have had very satisfactory results from the use of this opium and camphor pill. One case in which it worked admirably was that of a young boy, twelve years of age, in whose case it was necessary to devitalize a sixth-year molar. After treating the tooth I filled it, and apparently everything was satisfactory, and he was dismissed. The next day was a wet one, and it seemed to strike him as a good day to go fishing. He came home thoroughly wet, with a sore throat as the first symptom, and during the night his tooth began to ache, and by morning a very severe periostitis had developed. I tried to subdue it by external applications, the capsicum plaster, etc., but nothing seemed to relieve him until I gave him this opium and camphor pill. I have not seen him since, but some of the members of the family say that he went to sleep that night and had no further trouble from the tooth.—*Ohio Dental Journal.*

### CARBOLIZED RESIN AS A PULP CAPPING.

In an article on the treatment of deciduous teeth in *British Journal*, J. H. Jones says:

"Notwithstanding the greatest amount of care exercised, the pulp sometimes gets exposed whilst excavating; in that case as soon as possible, I apply carbolized resin to the exposure and then place of chloro-percha, sufficiently thick to drop from the end of an instrument upon the spot, over which I again put a layer of gutta-percha, very thin. On this I am able to build up an amalgam or white filling."

### A HINT BY DR. F. E. JUDSON, ANTIGO, WIS.

In preparing a tooth for the reception of a porcelain crown (Logan or Richmond), before excavating the natural crown, if you will take a piece of French rubber tubing, about one-eighth inch wide and a little smaller than the tooth to be crowned, carefully work it up on the neck of the tooth and as close to the gum as you can get without causing too much pain, allowing the patient to wear it for forty eight hours, you can then face the root off under the gum line without laceration, hemorrhage or discomfort to your patient, which I consider quite an advantage in doing a nice piece of crown work.

If natural crown is broken off, build down with cement sufficient to give room to adjust rubber tube.—*Ohio Dental Journal.*

## CLOSE OF THE YEAR.

At the completion of the present year the *Dental Office and Laboratory* will have completed its tenth year under its present form. Previous to 1887, the journal had been issued as a quarterly in newspaper form; but the publishers, recognizing the wants of its readers and the onward march of dentistry, changed the form of its issues to pamphlet form.

During the ten years past they have striven to give to its readers *at least one* original article with each issue, as well as the best selected articles from other journals.

The effort of its editor and publishers has been to do what they could to give the best thoughts, and to present the freshest literature for the contemplation and instruction of its readers. This, together with its "Practical Place," gathered from all sources and gleaned with considerable labor and experimentation, has been the "labor of love" for the profession of its editor, generously seconded by its publishers.

As age and time creep on, the editor feels no flagging of zeal to do all that is in his power to lay before the student and practitioner such things as may smooth the path of the one and refresh the mind of the other, in the doing of which he feels sure of the co operation of its publishers.

Whatever we have promised in the past, we hold to the same promises in the future.

In the mean time we invoke the aid of the profession for such articles, hints and suggestions as may be of benefit to the profession at large.

"Give and it will be returned to you a thousand fold."

Strive for the right and peace is given,
  Wrong shall not prosper long or well;
Better defeat and death for heaven
  Than victory on the side of hell.

No endeavor is in vain;
  Its reward is in the doing.
  And the rapture of pursuing
Is the prize the vanquished gain.

—Ed.

# GENERAL INDEX FOR 1896.

## A

Artificial Teeth. The Construction of, 1, 70, 90
Answers to Questions Concerning Anæsthetics and Obtundents . . . . . . 11
Anæsthesia. Cocaine Rendered Harmless 26
An Easy and Safe Method of Removing Pulps after Devitalization . . . . . . . 27
Advertising Dentists . . . . . . . . . 27
A Separating Medium that Imparts a Smooth Gloss . . . . . . . . . 28
A Few Facts About Aluminum . . . . 47
A Hint in Treating Abscessed Teeth . . . 55
A New Use for Gutta Percha . . . 57
A Reliable Obtundent for Sensitive Dentine . . . . . . . . . . . . . . 59
Aluminum Plates. Swaying . . . . . . 59
Amalgamating Gold Sections into the Cavities of Teeth . . . . . . . . 60
A Useful Hint (Corrundum Wheels and Chuck) . . . . . . . . . . . . . . . 61
Arsenic . . . . . . . . . . . . . . 63
Ancient and Modern Hypnotism . . . . . 70
A New Anæsthetic . . . . . . . . . 81
A Hint on Articulation . . . . . . . . . . 86
Alveolar Abscess. Poultice for . . . . . . 92
Acute Pericementites . . . . . . . . . . . 92
Amalgam. Preparing . . . . . . . . . 93
An Alloy Which Adheres to Glass . . . . . 95
Aconite to Abort Colds . . . . . . . . . . 141
A Remedy for Thirst . . . . . . . . . . 141
Anæsthetic. Local . . . . . . . . . . 140, 144
A Valuable Hint (Bacteria) . . . . . . 143
A Valuable Hint (in Vulcanizing) . . . . 172

Alloy and Cement Fillings . . . . . . . . . 157
A Pulp Capping. Carbolized Resin as . . 189
A Hint by Dr. F. E. Judson (Crowning Teeth) . . . . . . . . . . . . . . . . . 189

B

Bleaching Dark Joints with 25 per cent. Pyrozone . . . . . . . . . . . . . . . . . 32
Bridge Work on Vital Teeth . . . . . . . 34
Book Notices . . . . . . . . . . 52, 84, 126, 184
Blind Abscess. To Open a . . . . . . 53
Best Mandrel for Sand Paper Disks . . . . 69
Balsam Varnish . . . . . . . . . . . . . . 86
Bridge Work. Correct Articulation in . . 90
Boils. Treatment for . . . . . . . . . . . 141

C

Cocaine . . . . . . . . . . . . . . . . . 24, 79
Chloroform. How to give it . . . . . . . 29
Cleaning the Teeth . . . . . . . . . . . . 29
Cure for Thrush . . . . . . . . . . . . . 32
Cleaning Blood Spots on Clothing with Pyrozone . . . . . . . . . . . . . . . . 32
Cure for Tenderness After Root Filling . . 32
Capping a Tooth Pulp. Note on . . . . . 35
Clamps. To renew Rubber Dam . . . . . 52
Cleaning Impression Trays. Simple Method of . . . . . . . . . . . . . . . 54
Care in Vulcanizing when an Aluminum Plate is Made . . . . . . . . . . . . . 54
Cleaning Green Stain . . . . . . . . . . . 55
Cleansing Paste for the Hands . . . . . . 56
Carats of Gold . . . . . . . . . . . . . . 56
Caution While Giving Anæsthetics . . . . 58
Cleaning Clothing . . . . . . . . . . . . 58
Cocaine Under Pressure . . . . . . . . . . 59
Cranberries in Cholera . . . . . . . . . . 62
Conjested Pulp. Relief of Pain From a . . 63
Coating Cement Fillings . . . . . . . . . 63
Correct Articulation in Bridge Work . . . 90
Cologne. German . . . . . . . . . . . . 95
Correspondence (University of Buffalo) . . 124
Capping Pulps . . . . . . . . . . . . . . 140
Citric Acid in Diptheria . . . . . . . . . 141
Colds. Aconite to Abort . . . . . . . . . 141
Cement. Setting Crowns with . . . . . . 187
Carbolized Resin as a Pulp Capping . . . 189
Close of the Year . . . . . . . . . . . . 189
Conscientious Work. The Reward of . . 145

D

Dental Education in Philadelphia. Golden Anniversary . . . . . . . . . . . . 4
Dental Pulps. Methods of Destroying . . 16
D. Genese on an Effective Obtundant . . 27
Dentistry and Medicine . . . . . . . . . 31
Disinfecting Instruments . . . . . . 57, 58, 32
Disinfection of Foul Roots . . . . . . . . 54
Drops . . . . . . . . . . . . . . . . . . 56
Dark Joints in Vulcanite Work. To Prevent . . . . . . . . . . . . . . . . . . 63
Davis Angular Hand-piece. The . . . . 69
Dental Obtundent. Sulphuric Acid as a . 85
Devitalization of Exposed Pulps . . . 187, 85
Dental Teaching . . . . . . . . . . . . . 94
Diptheria. Citric Acid in . . . . . . . . 141
Dry and Sterilize Cavities before Filling . 142
Dyspepsia. Ice to Relieve . . . . . . . . 143
Dental Dots. (Hypertrophied Gums, Extirpating Pulps) . . . . . . . . . . . . 144
Dentimeter. Handy . . . . . . . . . . . 145
Disks and Strips. Lubricate Your . . . . 158

E

Extracting Teeth by Electricity . . . . . 26
Ether and Nitrous Oxide . . . . . . . . . 50
Exposed Pulps. Relief of Pain from . . . 60
Exposed Pulps. Devitalization of . . . . 85
Eucaine Hydrochlorate . . . . . . . . . . 153

F

Facts About Aluminum. A Few . . . . . 47
Foul Roots. Disinfection of . . . . . . . 54
Facial Fistula . . . . . . . . . . . . . . 66
Finishing Rubber Plates . . . . . . . . . 63
Flies and Mosquitoes. How to get rid of . 88

G

Golden Anniversary of Dental Education in Philadelphia . . . . . . . . . . 4, 70, 99
Golden Anniversary of the Penna. Ass'n of Historical Dental Surgeons . . . . . 58
Green Stain. Cleaning . . . . . . . . 63, 55
Gutta Percha. A New Use for . . . . . 57
Gutta Percha Filling Material. To Prepare . . . . . . . . . . . . . . . . . . 58
Gold Solders . . . . . . . . . . . . . . . 87
Gilding Without a Battery . . . . . . . . 89
Gum Acacia in Use with Plaster . . . . . 92
German Cologne . . . . . . . . . . . . . 95
Gutta Percha . . . . . . . . . . . . . . 188

H

How to Give Chloroform . . . . . . . . . 29
Healing Sores . . . . . . . . . . . . . . 32
Hemorrhage After Tooth Extraction. Persistent . . . . . . . . . . . . . . . . . 54
Hypertrophy of the Pulp and Gum Tissue 63
Hypnotism. Ancient and Modern . . . . 70
Hints. (Drilling glass.) . . . . . . . . . 86
How to get rid of Flies and Mosquitoes . . 88
How to Procure an Impression of the Mouth when the Patient is Inclined to Nausea . . . . . . . . . . . . . . . . 91
Hyper-sensitiveness at the Neck of Teeth 93
Handy Dentimeter . . . . . . . . . . . . 145
Hot Water for Hemorrhage . . . . . . . . 157

I

Irregularity of the Teeth. Correction . . 68
Illinois State Dental Society . . . . . . 124, 69
Inflammation of the Pulp . . . . . . . . . 87
Ice to Relieve Dyspepsia . . . . . . . . 143
India Rubber Pellets for Starting Gold Fillings . . . . . . . . . . . . . . . . 155
"Items of Interest." Change of Publishers . . . . . . . . . . . . . . . . . . 184
Immediate Root Filling. The Use of Sulphuric Acid in the Treatment of . . . . 185

J

Journalistic Pilfering . . . . . . . . . . 124

L

Leading Questions and Answers for Dental Students . . . . . . . . . 5, 36, 136, 174
Laboratory Hints . . . . . . . . . . . . 30
Lining Teeth . . . . . . . . . . . . . . 62
Local Anæsthetic . . . . . . . . . 140, 144, 93
Lubricate Your Disks and Strips . . . . . 158
Liquid Dentifrice . . . . . . . . . . . . 159

M

Methods of Destroying Pulps . . . . . . . 16
Musk Dentifrice . . . . . . . . . . . . . 30
Medicine and Dentistry . . . . . . . . . 31
Magnesium Hydrate . . . . . . . . . . . 51
Mending Broken Plaster Casts . . . . . . 53
Manipulation of Zinc Phosphate in Hot Weather . . . . . . . . . . . . . . . . 62
Mosquitoes and Flies. How to get rid of . 88
Mosquito Bites . . . . . . . . . . . . . 92

N

Note on Capping a Tooth Pulp . . . . . . 35
Nitrous Oxide and Ether . . . . . . . . . 50
Napoleon's Care of His Teeth . . . . . . 53

Nitrate of Amyl in Case of Syncope . . . 58
Nose Bleed. Trichloracelic Acid in . . . 59
Near Pulp Exposure . . . . . . . . . . . 62
Nausea and Impressions of the Mouth . 91
National Association of Dental Examiners . . . . . . . . . . . . . . . . . . . 123
Nearly Exposed Pulps. Protection of . . 159
National Association of Dental Faculties . 177
New Jersey State Dental Society . . . . . 184

O

Obituary. Dr. Jas. E. Ganetson . . . . . 9
Obituary. Dr. W. H. Dwinelle . . . . . . 122
Obtundent and Anæsthetics. Answers to Questions Concerning . . . . . . 11
Opening Root Canals . . . . . . . . . . . 54
Obtunder for Sensitive Dentine . . . . . . 55
Over Medication . . . . . . . . . . . . . 57
Oxyphosphate as an Adhesive Medium . . 61
On Suction Chambers . . . . . . . . . . 82
On a Local Sedative for Devitalizing the Dental Pulp . . . . . . . . . . . . . . . 89
Oxyphosphate Fillings . . . . . . . . . . 142
Oxyphosphate . . . . . . . . . . . . . . . 144

P

Putrescent Tissue in Root Canals. To remove Remnants of . . . . . . . . . . . 26
Perplexities of Dentists . . . . . . . . . . 43
Plaster Casts. Mending Broken . . . . . 53
Persistent Hemorrhage After Tooth Extraction . . . . . . . . . . . . . . . . 54
Parafine for Superficial Caries . . . . . . 59
Painless Removal of the Entire Pulp . . . 86
Putrescent Pulp Canals . . . . . . . . . . 91
Pain After Extraction. Relief of . . . . . 91
Painless Adjustment of Rubber Dam Clamps . . . . . . . . . . . . . . . . . 92
Poultice for Alveolar Abscess . . . . . . . 92
Pericementitis. Acute . . . . . . . . . . 92
Porous Plates. To Prevent . . . . . . . . 93
Preparing Amalgam . . . . . . . . . . . 93
Pumice Stone for Soldering Block . . . . . 94
Pyrozone . . . . . . . . . . . . . . . . . 94
Pyorrhea Alveolaris . . . . . . . . . . . . 94
Pains After Extraction of the Teeth . . 127
Pulp Capping . . . . . . . . . . . . . . . 140
Plaster Casts. Tin Coating for . . . . . . 141
Periodentitis . . . . . . . . . . . . . 188, 157
Protection of Nearly Exposed Pulps . . . 159
Pennsylvania Association of Dental Surgeons. Officers for 1897 . . . . . . . . 183
Preparing the Cavity for Filling . . . . 187
Pulp devitalization . . . . . . . . . . . . 187
Pulp Inflammation. To Reduce . . . . . 188
Periostitis . . . . . . . . . . . . . . . . . 188

R

Relief of Pain from Suddenly Exposed Pulps . . . . . . . . . . . . . . . . 60, 26
Removing Pulps after Devitalization. An Easy and Safe Method . . . . . . . . . 27
Root Canals. Opening . . . . . . . . . . 54
Rubifoam. (Mouth Wash.) . . . . . . . 61
Rubber Plates. Finishing . . . . . . . . 63
Relief of Pain from Congested Pulp . . . 63
Removal of Pulp Entire. Painless . . . . 86
Relief of Pain after Extraction . . . . . . 91
Removal of Plaster from Vulcanite Plates 92
Removal of Blood Stains . . . . . . . . . 93

S

Separating Medium which Imparts a Gloss 28
Some Laboratory Hints . . . . . . . . . . 30
Student. The Dental . . . . . . . . . . . 39
Setting Crowns with Cement . . . . . . . 53
Simple Method of Cleaning Impression Trays . . . . . . . . . . . . . . . . . . 54
Sensitive Dentine Obtunder . . . . . . . . 55
Soldering Glass with Metals . . . . . . . 55
Steresol in Local Anæsthetics. The Use of 56
Sozodont . . . . . . . . . . . . . . . . . 57
Solution for Disinfecting Instruments, 57, 58
Superficial Caries and Parafine . . . . . . 59
Swaying Aluminum Plates . . . . . . . . 59
Suction Chambers . . . . . . . . . . . . 82
Sulphuric Acid as a Dental Obtundant . 85
Solder for Aluminum . . . . . . . . . . . 88
Small Pox. Cure of . . . . . . . . . . . . 88
Self Reliance . . . . . . . . . . . . . . . 90
Stains on the Teeth. To Remove and Clean . . . . . . . . . . . . . . . . . . 92
Sulphuric Acid. (Opening Roots.) . . . 95
Serious Accident from Chlorate Potassium Lozenges . . . . . . . . . . . . . . . 144
Starting Gold Fillings. India Rubber Pellets for . . . . . . . . . . . . . . . . 158
Some Causes of Tooth Loss Other Than Dental Caries . . . . . . . . . . . . . 61
Setting Crowns with Cement . . . . . . . 187
Solder for Platinum Crowns or Bridges on which Porcelain is Fused . . . . . . . 186

T

The Construction of Artificial Teeth . 1, 65, 129
The Breath . . . . . . . . . . . . . . . . 20
To Remove Remnants of Putrescent Tissue in Root Canals . . . . . . . . . . . 26
Test for a Dead or Living Pulp . . . . . 27
Two Useful Ideas in Prosthetic Dentistry . 28
Thrush. Cure for . . . . . . . . . . . . . 32
To Remove Warts . . . . . . . . . . . . . 32
The Dental Student . . . . . . . . . . . 39
To Renew Rubber Dam Clamps . . . . . 52
To Open a Blind Abscess . . . . . . . . . 53
To Mummify Pulps in Inaccessible Canals 56
The Use of Steresol in Local Anæsthetics 56
To Prepare Gutta Percha Filling Material 58
Trichloracetic Acid in Nose Bleed . . . . 59
Taking the Bite . . . . . . . . . . . . . . 62
To Prevent Dark Joints in Vulcanite Work . . . . . . . . . . . . . . . . . . 63
To Relieve Toothache . . . . . . . . . . 87
The Use of Phosphated Oil in Dentistry. Caution . . . . . . . . . . . . . . . . 87
To Secure the Retention of Applications on Cotton in Tooth Cavities . . . . . . 91
To Adjust Rubber Dam Clamps Painlessly 92
To Clean and Remove Stains from the Teeth . . . . . . . . . . . . . . . . . . 92
To Prevent Thick Rubber Plates Becoming Poruos in Vulcanizing . . . . . . . 93
Tooth Cream . . . . . . . . . . . . . . . 95
The Chicago Dental Society . . . . . . . 96
Treatment for Boils . . . . . . . . . . . . 141
Thirst. A Remedy for . . . . . . . . . . 141
Tin Coating for Plaster Casts . . . . . . 141
The Reward of Conscientious Work . . 145
Thirty-first Annual Commencement of Missouri Dental College . . . . . . . . 184
The Use of Sulphuric Acid in the Treatment of Roots for Immediate Filling . . 185
To Reduce Pulp Inflammation . . . . . . 188
To Imitate Gold Fillings . . . . . . . . . 90
Trichloracetic Acid to Remove Green Stains . . . . . . . . . . . . . . . . . . 63

V

Varnishing Cavities . . . . . . . . . . . 46
Vulcanizing on an Aluminum Plate . . . 54
Varnish for Lining Cavities . . . . . . . . 61
Varnish Balsam . . . . . . . . . . . . . . 86

W

"Welch's Monthly" . . . . . . . . . . . . 185

Z

Zinc Phosphate in Hot Weather. Manipulation of . . . . . . . . . . . . . . . 62

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[FOURTH PAPER]

# THE CONSTRUCTION OF ARTIFICIAL TEETH.

(Continued.)

By Theodore F. Chupein, D. D. S., Philadelphia, Pa.

## Arrangement of the Teeth.

It will sometimes be found that the upper gum is so protuburant that it will be impossible to cover this with gum section teeth, however thin the gums of these may be, or even to cover it with pink rubber, however thin a layer of this may be used. In laughing or speaking, the lip (in some persons with short upper lips) rises and reveals the false gum sections or the poorer imitations of the natural gum in pink rubber. To combat this it is best to let the artificial teeth, rest directly against the natural gum. In arranging the teeth for a case of this nature, the articulating wax is cut entirely away so that the cast is exposed and each tooth is ground to fit closely against the plaster cast. The plaster cast may be scraped so as to let each tooth fit into its place. This will not interfere; for as the gum is yielding, the artificial teeth will slightly sink into this tissue and give the appearance as if they were growing out of the gum.

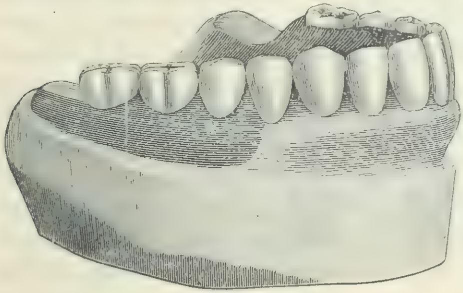

FIG. 11.

When the region of the bicuspids is reached, gum may be added on each side, beginning at the 1st bicuspid and continuing backward over the tuberosities. A case such as we have described is represented by Fig. 11. When the teeth for a case of this kind are arranged on the cast, and articulated properly, all that part of the cast from the bicuspids to the last molar is painted with a solution of rubber in chloroform. Before the cast is thus painted, it should be *thoroughly dried*, for if it be not dry the rubber solution will not adhere to it; if it is damp, the rubber will peel off. When the rubber solution is well dried small pieces of pink rubber are cut and warmed on a piece of heated soapstone, and each piece is taken, by means of the heated spatula, and placed against the painted surface of the cast. The pieces may be cut into little squares about one-eighth of an inch square; and small pieces may be cut triangular to place between the teeth. It is important while doing this, as well as before painting the cast, that all wax should be removed from the surface of the cast where the pink rubber is to be added, as well as to see that there is no wax on the spatula. If wax gets on the pink rubber as it is placed on the cast, it will not adhere. Pink rubber is thus added until a false gum at the back part of the plate is formed, as is shown by Fig. 11. The pink rubber may be made perfectly smooth by means of the hot spatula. This manipulation having been made on both sides, the case is ready to be flasked. In flasking, the cast and teeth may be entirely embedded in the plaster investment of the flask, so that only the palatal part of the plate is left exposed for the packing of the red vulcanite (or black vulcanite) which forms the plate.

Where there is a close bite, that is, where the lower natural teeth almost strike the upper gum, teeth with metal backings will have to be used, because if nothing but vulcanite be used, the case will be so thin, and consequently so weak, that they would soon be broken. In such a case the metal teeth are ground to fit against the gum and when this is done a plaster matrix is cast over the labial surface of those teeth. The wax which held the teeth in place, while they were being ground, is removed, and each tooth is backed with metal and an extension is soldered to each backing. This is shown by Fig. 12. Gold or platinum may be employed for the backings and extensions, but for economy sake German silver may be used both for the backings and the extensions. We have used this metal in many

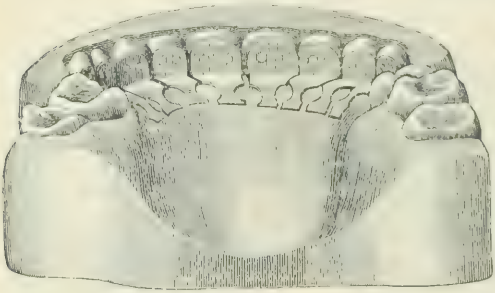
FIG. 12.

cases, both for work of this kind and for regulating appliances, and have found it answered every purpose without being derogatory to the system, as far as we have been able to observe, in any way.

## WAXING.

This should be neatly and carefully done. The teeth mounted on the cast with wax, should be as nearly what it will be when completed with vulcanite, as possible.

When the case has been removed from the articulator, all superfluous wax should be scraped away with a warmed spatula, and the wax made perfectly smooth. This may be neatly accomplished by holding the case in the left hand near the blaze of a spirit lamp, and with a chip syringe in the right hand, the tube of which being in the blaze, little puffs of heat are directed against the wax, this makes the wax flow evenly and smoothly all over. When the wax gets perfectly cold, a piece of soft rag may be rubbed over it. This imparts a perfectly smooth surface as well as a gloss like the skin of an apple. This surface is imparted to the investment, and by rubbing the investment with fine French chalk with a rag, when the case comes from the flask very little scraping will be needed.

## FLASKING.

It is always best to keep the teeth in the lower part of the flask so that they may be held immovably against the cast by the investment. This is done because the teeth are less movable when flasked in this way, than if the teeth are permitted to come away in the upper part of the flask. This may be *always* accomplished in this way. Instead of making a wax rim, as is usually done when gum sections are used, paint the cast with rubber solution and make the rim of vulcanite, by adding pieces of rubber against the painted cast, and over the edges of the block sections. Or if plain teeth are used the model may be painted and pink rubber packed against the cast and teeth so as to form a false gum. In this way the cast and teeth may be embedded in the investment of the lower part of the flask and thus held more securely and immovably than by the other plan.

Fig. 13 shows a case invested as we have described.

When plain teeth are used, and the false gum is made of pink rubber, and the case invested as shown by Fig. 13, pink rubber should be packed *beneath* the pins of the teeth, so that it will unite with the pink rubber which was used on the front, in order to prevent the red rubber, which forms the plate, from cropping through and defacing the work.

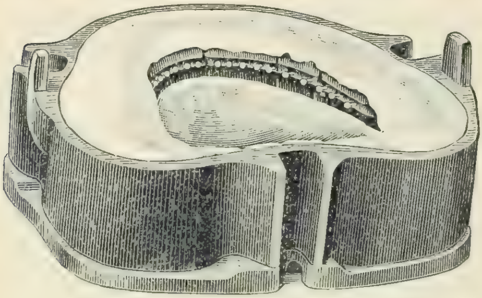

FIG. 13.

Before flasking it is well, when gum sections are used, to remove each block, scrape off all wax that may be adhering to the edges of the blocks and thoroughly clean them; or the edges may be sandpapered for the same object, and before replacing them a film of thin plaster of Paris, or thin phosphate cement, may be put on the edges of the blocks, when they are returned accurately to their places. In this way the rubber cannot work through and deface the work by a dark joint. It is needless to expect to prevent dark joints by scalding out the wax with boiling water poured into the flask from a kettle, for the wax is thus melted and becomes as fluid as water, and in this condition finds its way in between the joints.

Before flasking it is best always to soak the cast in water, for if this be not done, the dry cast will rob the water from the plaster of the investment, which will not flow accurately everywhere it is wanted. It is likewise best to let the back part of the cast come as near to the edge of the flask as possible, so that as great a body of the investment will be in the front of the teeth, which will hold them more securely. Our idea in this respect is shown by Fig. 14. When placing on the ring of the flask be sure that the guide pins fit accurately so that there will be no trouble in passing the bolts in place.

The investment plaster should be creamy; not too thick. The water should be placed in the bowl and the plaster added to it until it becomes entirely water soaked before beginning to stir it, and the stirring should be always in one direction—not first to the right and then to the left. Sufficient plaster should be added to the water before commencing to stir. It will not do to stir the plaster, and, should it be too thin, to add more plaster to make it thick enough. This will spoil the investment. Indeed, plaster, whether mixed for an investment or to pour into an impression, should never be manipulated in this way. Many good impressions are thus spoiled.

Before pouring the investment in the upper ring of the flask, provision should be made that the plaster in the one should not adhere to plaster in the other. We were in the habit of varnishing the investments in the first half of the flask, oiling this and then pouring the investment in the other half; but we have found if the investment in the first half be simply well lathered with soap by means of a brush, and then pouring the investment in the other half, there will not be the least danger of the two adhering.

The investment is permitted to get thoroughly hard before any attempt is made to separate the parts of the flask. The flask is heated thoroughly for this purpose, either by dry or wet heat. If dry heat be used the flask is turned over and over on the laboratory gas Bunsen burner, so that it may be evenly heated throughout. This must be done with care and attention, so that the wax within may not be melted, but merely softened. We have been told that the best way to accomplish this is to place the flask in a pot of cold water and to bring the water to the boiling point, when, on separating the flask, the wax within will be found thoroughly softened, not melted. Plaster being a non-conductor of heat, the boiling water merely warms the investment, and thus prevents the melting of the wax within. The water should not be permitted to boil for any length of time, but as soon as the boiling commences the flask is to be removed from the pot. The hot flask is held by means of a cloth pad or with an old towel folded several times. The edge of a plaster knife is then insinuated between the separations of the flask, and the two parts prized gently apart. The softened wax is then collected, and such of it as adheres to the pins of the teeth is permitted to get a little chilled, when it may be more easily removed from the pins. Every vestige of it may then be removed by pouring boiling water into the

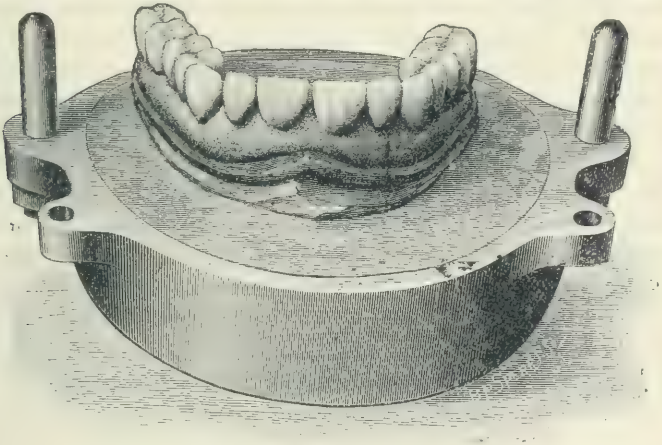

FIG. 14.

flask. No fear of dark joints need be apprehended if the blocks were lifted off as we suggested before flasking the case. Everything being cleaned the case is ready for packing.

It is always found that when a case is vulcanized that the plaster adheres to the vulcanite unless some provision be made to prevent this. Various materials have been suggested for this, such as "Collodion," "Liquid silex," "Tin foil," &c. Liquid silex does this well, but the material is often intractable, and should be kept just at its right condition, must be applied to the dry plaster cast, &c., &c. Tin foil serves a good purpose, but cannot always be laid on the cast perfectly smooth. It is removed from the plate by immersing it in a bath of nitric acid and water—$\frac{1}{4}$ of acid to $\frac{3}{4}$ of water—when the tin will be eaten entirely off in a few minutes (about 10 minutes) by the acid. But this is not always permissible, for should the case be one where metal teeth with extensions are used, or where clasps with extensions are employed, then the acid would act on the clasps and extensions should these have been made of German silver, and in this way the work spoiled. For example as shown by Fig. 12.

A plan has recently been called to our attention, which, on trial, has yielded good results. It is to coat the face of the cast as well as the reverse of the investment with "fluid tin." This is made as follows: Procure a quarter ounce of collodion, thin this down by adding to it three quarters of an ounce of ether, and pour into this some "silver gloss." Silver gloss is a preparation of tin and zinc, which may be obtained from all dealers in paints, oils, &c., for house painting. Though called "silver gloss" it contains no silver, and only resembles that metal in color and luster. The silver gloss is emptied into the bottle containing the diluted collodion, when it is applied to the face of the plaster cast, as well as to the reverse of the investment, with a camel hair pencil. A very thin film is left on these, which effectually prevents the rubber from adhering.

[TO BE CONTINUED.]

[TWENTY-EIGHTH PAPER.]

## LEADING QUESTIONS AND ANSWERS FOR DENTAL STUDENTS.

By THEODORE F. CHUPEIN, D.D.S., Philadelphia, Pa.

Q. Is this encrustation, or hard deposit, the only form of tartar observable on the teeth?

A. There is a deposit, often noticeable on the teeth of children, about the ages of 10 to 14 years, of a dark green color, generally denominated "Green Stain." It is not a hard deposit, but adheres to the teeth at the necks or gum margins, and is of a corrosive nature, eating into the enamel.

Q. How should this deposit be removed?

A. This green stain is better removed with powders, used on wood points or fine Arkansas stones, mounted on mandrels, for the dental engine, than with instruments. Instruments, if used, frequently break into the eroded enamel, which would be detrimental, while the fine cutting powders or Arkansas stones leave these surfaces polished.

Q. Are any chemical agents recommended for use with these agents?

A. A weak solution of trichloracetic acid, or pyrozone, or tinct. iodine, have been recommended for the removal of this deposit, used with wood points in the dental engine and generally in conjunction with powders.

Q. Are the "green stain" and the ordinary salivary calculus the only forms of deposit noticeable?

A. No. There is a deposit called "serumal calculus" sometimes found on the roots of the teeth and at their apices. This extends from the neck to the apex, and is in the form of greenish nodules; or it encircles the root just below the neck of the tooth.

Q Is this deposit eliminated from the saliva?

A. No, it is supposed to be derived from the serum of the blood.

Q. How do you account for this?

A. The serum of the blood being decomposed, liberates its lime salts, thus affording material for the deposit.

Q. What do you mean by the serum of the blood?

A. The serum is a yellowish or greenish fluid which separates from the blood after the coagulation of the fibrin.

Q. And what is fibrin?

A. It is the principle of animal bodies, composed of hydrogen, oxygen and carbon, and the chief principle of coagulation. It exists in the blood in innumerable fibrils, which act by entangling the blood corpuscles like a spider's web, and forming them into a blood clot. It is insoluble in water, is of a white color and inodorus nature, elastic when moist but hard and brittle when dry.

Q. What is the cause of the deposit of serumal calculus?

A. It is the result of inflammation.

Q. How is it recognized?

A. In the form of minute nodules the size of and smaller than a pin's head. These nodules are of a dark greenish color, very hard and brittle, and very irritating, causing the loosening of the tooth, by phagedenic ulceration, giving rise to pericementitis and alveolar prorrhœa.

Q. What do you mean by phagedenic ulceration?

A. The word phagedena is derived from the Greek, and signifies "to eat." It is the form of a rapidly spreading destructive ulcer, disintegrating the soft parts.

Q. Is this deposit harder or softer than ordinary salivary calculus?

A. It is infinitely harder.

Q. Why should this be?

A. Because the nodules are more mineral in their nature than ordinary tartar.

Q. What gives rise to this deposit?

A. A disorganization of the blood and the consequent ulceration of the tissues.

Q. Besides these nodular formations on the root is anything else observable?

A. The root or roots of the affected teeth are often denuded of their cementum.

Q. Cannot the deposit be removed and health restored to the tooth?

A. The nodules adhere so firmly to the roots, and are deposited so near their apices, that it is extremely difficult to approach and to remove them, besides the infliction of considerable pain, as the teeth are very loose in their sockets, and have to be held by the fingers of one hand while the instruments are used with the others.

Q. Does the deposit always extend on the roots towards their apices?

A. Not always. Sometimes there is a succession of nodules forming a ring near the neck of the tooth, and giving to the semi-transparent gum a bluish tint. A serus fluid exudes about the neck of the tooth when the gum is pressed at this point, which indicates ulceration, and it is this ulceration which gives rise to the deposit.

Q. Is this serus fluid the same as pus?

A. It is not of the same nature as pus, being odorless and watery.

Q. How may you define the difference between salivary calculus and sanguinary calculus?

A. Salivary calculus *causes inflammation*, and sanguinary calculus *is caused by inflammation.*

**Q. How then is it proposed to treat such teeth?**

A. In the same way that pyorrhœa alveolaris is treated.

**Q. What is pyorrhœa alveolaris?**

A. The word pyorrhœa means "a flow of pus." It was described years ago by Fouchard, and took the name of "Fouchard's disease;" it is also known as "Riggs' disease." Pyorrhœa alveolaris is a disease of the sockets of the teeth.

**Q. How is it recognized?**

A. An uneasy sensation first brings it to the notice of the patient, the gum margins then swell and become loose around the necks of the teeth, and spaces or pockets are induced. The gums thicken, and to pressure pus exudes, the edges of the alveoli and alveolar borders necrose or die; the bleeding is profuse. The inflammation continues growing deeper and deeper until the teeth, being left with little support, become very loose. There is a disagreeable taste in the mouth and the breath is offensive. The gums assume a bluish or greyish color and are very sensitive to the touch.

**Q. What is the theory of the disease?**

A. That it is a systematic condition due to the condition of the blood. That the blood is invaded by uric acid, which is particularly noticed in persons of gouty diathesis. That this uric acid circulates with the blood and localizes at certain points, the favorite point being in the great toe and metatarsal joints. That this acid proves a great irritant.

**Q. How does it affect the teeth?**

A. This is not well understood, but Dr. E. C. Kirk, of Philadelphia, thinks that the uric acid does not affect normal tissue, but circulating, as it does, with the blood, on reaching a point which may be slightly irritated, the uriates immediately attack this point and localize there.

**Q. What is gout?**

A. It is a constitutional disease, of which the characteristic is an excess of the uric acid in the blood.

**Q. What is uric acid?**

A. It is an acid derived from the urine, particularly noticeable in persons of a gouty diathesis. Pure uric acid is whitish in color, without odor, and crystalline. It has great affinity for alkaline basis, thereby forming what is termed "the uriates." It forms most often with soda and ammonia, making with these the uriate of soda and the uriate of ammonia, which constitute the large part of urinary calculi or stone in the bladder. We frequently notice it in the form of a deposit of a reddish sediment in the urine.

Q. What occurs at the extreme stage of this disease, pyorrhœa alveolaris?

A. A complete destruction of the alveoli and peridental membrane, the teeth being held in position only by a tough ligament, the roots of the teeth being often coated with a layer of calculus of a dark green color, exceedingly tenacious and of great hardness, rendering its removal, with the teeth in their loosened condition, very difficult.

Q. Is any other name given to this disease besides those we have enumerated?

A. Dr. Black, writing on the subject, terms it "phagedenic pericementitis."

Q. Does he favor the constitutional or systemic cause of the disease?

A. He maintains it to be of local origin, while Dr. Charles B. Atkinson ascribes it to constitutional causes.

Q. What is the treatment proposed?

A. All deposit of salivary calculus is to be removed, and the surfaces to be well polished. In the more advanced stages of the disease the necrosed bone is to be removed by means of sharp round burs in the dental engine.

Q. How is it known that all the diseased bone is removed?

A. This is only recognized by a very delicate and sensitive sense of touch, the feeling conveyed by sound healthy bone being different to dead or diseased bone.

Q. How can you do this cutting when you say the teeth are so loose that they are almost ready to drop out?

A. By holding them with the fingers of one hand while you direct the scraping and cutting tools with the other; or it may be accomplished by forming a splint or matrix of base plate gutta-percha or modelling compound, cleansing first one side, and then with a reverse splint or matrix cleansing the other.

Q. Is this not attended with considerable pain?

A. It is, as well as with considerable bleeding.

Q. What is the next procedure?

A. The cleansed surfaces are bathed with aromatic sulphuric acid, and per oxide hydrogen. Chloride of zinc has also been recommended when the disease is complicated by ill health or constitutional disturbance. The loosened teeth are then ligated with sterilized ligatures, and a wash of chlorate of potash prescribed, used after each meal and at night before retiring.

Q. It would appear to us that the roots of the teeth, so circumstanced, must be entirely denuded of their peridental membrane. If this be so, how is it expected they will ever regain their firmness in their sockets?

A. Some operators state that they do regain their firmness, but whether the peridental membrane is destroyed or not, or whether it is formed again, we are unable to state. Dr. A. W. Harlan proposes the following treatment: The pockets are first filled with iodoform and oil of cinnamon, or iodoform and eucalyptus, or they may be thoroughly washed and syringed out with a solution of chloride of alumina, one to three grains to the ounce of water. After three or four days the sanguinary deposits may be removed, as well as the edges of the alveoli burred away. The pockets are then thoroughly washed with per oxide of hydrogen. The pockets are then dried and injected with a solution of iodide of zinc, twelve grains to the ounce of water. After the lapse of several days the pockets are again dried and fine cotton moistened with per oxide of hydrogen gently pressed in. If any effervescence take place it shows that there is pus present, when the treatment with iodide of zinc should be continued. In more serious cases stronger solutions and more protracted treatment will be required.

## CATAPHORESIS AND OBTUNDANTS.

By Theodore F. Chupein, D. D. S., Philadelphia, Pa.

It seems to us that we are taking considerable trouble, and going to considerable expense, in this matter of dental obtundants, which might be secured in a less laborious and less expensive way.

The apparatus for producing cataphoresis is expensive, and many operators, despite their desire to save their patients pain, are debarred from its use by the outlay which their limited practice does not warrant. We are therefore induced to lay before our readers the experiments of Dr. Clyde Payne, of 731 Sutter street, San Francisco, Cal., for producing this most desirable object.

We are all aware that in carious dentine the tubulii are filled with protoplasmic matter of acid reaction and before it is possible to get the effect of obtunding medicaments, it is necessary to overcome this condition; it uncorks, as it were, the dentinal tubulii and makes it possible to force in the obtundant, whether by cataphoresis or other means.

Dr. Payne first proposes to apply the rubber dam, to remove as much of the disorganized tissue as may be done painlessly, to dry the cavity with warmed air, to farther dehydrate the cavity with absolute alcohol, to remove all traces of acid by the employment of a saturated solution of carbonate of potassium in the best double distilled glycerine, and after these initial steps to wipe out or dry out the potassium solution, and apply a saturated solution of hydrochlorate of cocaine in carbolic acid, letting this stay in the cavity until it is dried out by continuous blasts of warm air, when he claims such analgesia is produced that a live pulp may be removed painlessly.

## COATING CASTS FOR VULCANITE WORK.

A plan has recently been suggested for this, but as it was invested with a certain amount of ambiguity we have been at some trouble to find out what was meant, and how to make the preparation, for the benefit of our readers.

Procure a quarter of an ounce of "collodion," add to this three quarters of an ounce of sulphuric ether, so as to thin the collodion down, and pour into the bottle containing these a package of "silver gloss."

Silver gloss is a preparation of tin and zinc and may be obtained of all dealers in paints, oils, putty and other materials for house painting. Though called silver gloss it contains no silver. It comes put up in papers of an ounce or more; in the form of an impalpable powder. It unites, to a certain extent, with the collodion, when shaken, and is applied to the face of the plaster cast, as well as to the reverse of the investment in a case flasked for vulcanite work, with a camel hair pencil, leaving a very even and thin film over these which effectually prevents the adhesion of the vulcanite to the plaster, permitting the case to come from the flask clean. The silver gloss may be had at slight expense, enough to last for a year or more with ordinary use. It should be kept in a well-corked bottle, and the pencil cleaned after each use. Should particles of it adhere to the plate, it can be entirely eaten off by immersing in a bath of nitric acid and water—one quarter acid, three quarters water; but this we have not found necessary as it comes from the flask clean.

# SELECTED ARTICLES.

## ETHERIAL ANTISEPTIC SOAP IN THE DENTAL OFFICE.

By William H. Mitchell, D.D.S., Bayonne, N. J.

Those dentists who are in the full practice of their profession and do all their own work, have looked for years to find some soap that would keep their hands in proper condition for their work at the dental chair; this I can say is found in Johnston's Etherial Liquid Soap.

The dentist who uses this soap can go to his chair not only knowing that his hands are perfectly cleansed, but with a feeling of flexibility in his fingers that seems to facilitate his every movement.

Many dentists have abandoned the work in the laboratory for the only reason that their hands become so soiled with the work as to unfit them from appearing neat at the chair. Those who have appreciated these unpleasant features of laboratory work will now find these difficulties removed.

The difficulty of removing the stain produced by handling a flask just from the vulcanizer, and the persistent odor that remains upon the hands after working vulcanized rubber and finishing and polishing a case, as well as the roughness of the skin from handling plaster of Paris, all tend to foster a distaste for the prosthetic work; and the result is he gives up this branch of active dentistry.

After having washed his hands with Johnston's Soap he knows all these unpleasant features are removed; there is no odor on his hands, the absolute asepsis and the softness and smoothness of his skin, he goes to his operating room with a feeling of gratefulness and the absolute knowledge that he has secured the safety of his patients and his own personal comfort.

As a parting medium for flasking cases much time can be saved by using this soap instead of varnish and oil. The case as flasked in the first half is merely soaped and as the menstrum is ethereal the solution is so perfect as to result in the formation of a film of exquisite thinness but of a soapy nature which parts the flask readily and results in producing a thinner plate.

In pouring casts in plaster impressions, this soap is also of value. If desired, the soap can be colored with anilin to form a line of demarkation, and as the cast fits the impression closer the result can not be other than a closer fitting plate.

For washing mouth-mirrors, scissors, tongue-guards, reflectors, lip-holders, clamps and other instruments, particularly those with joints in their construction, this soap is a perfect cleansing medium.

Aside from the special medicinal and cosmetic uses for Johnston's Soap, it is a quick and perfect eradicator of grease in woolen garments.

## REMOVAL OF PULPS, AN IMMEDIATE AND NEARLY PAINLESS METHOD.

By F. J. Fesler, D.D.S., Lowell, Mass.

The writer, during a practice of seventeen years, has seen published in various dental journals many articles which it seemed everyone should be familiar with, methods which I had been using in my office for years. The fact, however, that these means and methods were not new to me, did not prevent the authors of them from conveying something of help to some younger or less experienced men in the profession, who had not had their attention called to the particular point in question. This may be the case with what I am about to write.

Some men may be able to tell me something better for destroying the pulps in teeth, but with me it works so satisfactorily that I wish others, who may be progressing in the old way taught at the colleges and in the text books, to be benefited. If I can help even one practitioner, and I am sure I will reach many who as yet have not adopted this method, I will accomplish all I desire. Some of the more conservative will probably criticize me for using so strong a mixture. I will not ask them to use more strength of solution in all cases than they find necessary, and am myself ready to accept any suggestions that tend towards improvement, if backed up by the experience of a fair number of cases and not by mere speculation. With this preface, and a hope to read in the near future the experiences of other men, either as the outgrowth of ideas from this article or original suggestions of their own, I will tell you as briefly as possible what to do when you meet that formidable little enemy, a live or partially live pulp.

Go to your druggist and ask him to make a solution of muriate of cocaine in this way. Take a test-tube in which ten grains of muriate of cocaine have been placed, and add one drachm of distilled water, then bring to a boil, cool and place in a vial for use. You can do this in your own office if you choose. Now when occasion presents itself, put the rubber dam over the tooth to be operated upon and tie it, or in some way make it so tight that none of the solution will go through into the mouth or on the gum, and I think a clamp is the most reliable to prevent displacement by any sudden movement of the patient. If the pulp be alive and not exposed, so that it cannot be readily reached with a hypodermic needle, take a small drill, the same size as the needle, and open just to the pulp. Then take into your syringe a quantity of the cocaine solution and place one or two drops in the cavity in such a way as to numb the pulp to the entrance of the needle. This can usually be accomplished in one or two minutes, so that but a very little pain will be felt on entering the needle, say a thirty-second of an inch into the pulp. This may also be accomplished by touching the exposed pulp with a 95 per cent. solution of carbolic acid.

Now after entering the needle use gentle pressure, injecting the solution and pushing the needle further into the pulp as fast as sensation is lost. The whole operation of anesthetization may be completed in from three to five minutes, so that a hook broach can be carried to the end of pulp-canal and turned around, thus amputating the pulp, to be afterwards removed with a barbed broach, by a broach wound with cotton, or in any way you may see fit. Any hemorrhage may be stopped with carbolic acid.

I am in the habit of filling my hypodermic syringe, then place it in position, the needle point just at the entrance to the canal, and while it is held in that position place enough of Gilbert's temporary stopping, which has been previously warmed, around it to fill the cavity. This is applicable to those cases where the nerve is partly alive, receded, or the cavity is so large as to allow much of the liquid to flow back and so not enter the pulp. It will be found necessary where the pulp extends to two or more roots, so that enough pressure from the syringe may be exerted to force the solution throughout them all, or each root may be treated separately. Each case will present conditions requiring slight differences in manipulation which will readily suggest themselves. The operator should always use care if he has any cuts or abrasions on his hands that the solution does not get into them, and the hands should be immediately washed if free from cuts.

The filling may be inserted at once in all cases where the pulp has been immediately exposed and removed, or where the upper half of the pulp was healthy when removed, although it might be well to treat the last named case with a little carbolic acid or other antiseptic. There are many cases, particularly of lateral incisors, which present so little space to anchor a temporary filling, that this method is far preferable, and as the permanent filling can be immediately inserted, considerable experiment is warranted. Of course one should be very cautious, if the least suspicion of a large apical foramen be present, that none of the material be carried through into the surrounding tissues.

Some may question whether the action of the cocaine is not injurious to the tooth. Well, five minutes of cocaine is not equivalent to hours of arsenical preparations in bone and nerve tissue, to say nothing of the hours of pain while arsenic is encased within a tooth. Had I known the benefits to be derived from this method years ago it would have been a priceless boon to me, besides being a great saving of time and pain to my patients.

## AN ACT OF DENTAL UNCLEANLINESS.

By A. R. Church, D.D.S., Chicago, Ill.

Many dentists are extremely careful to have their instruments thoroughly sterilized after every operation. They wash their hands carefully and have their nails manicured, but use modeling compound and wax for impression work from mouth to mouth until it becomes fairly filthy.

Science has shown that the mouth is almost a perfect incubator for the growth of micro-organisms of all kinds. What an injustice men of our profession are doing the public in transferring germs of disease from one person to another in this manner.

If infection can be carried on the small point of a delicate excavator or lancet, what a risk a practitioner of dentistry runs in placing a mass of compound in the mouth, which has been used, for instance, on a syphilitic patient. Some may say the excavator, scaler or lancet is a different thing, for it comes in actual contact with wounded and bleeding tissues, while the impression material does not. How about partial impressions taken after removal of deposits on remaining teeth, after extractions, and after the preparation of roots for crown or bridge work? Even if the tissues be not wounded, what dentist with his knowledge of bacteriology would run the risk of placing in his own mouth a substance which has been used on a patient having

Pyorrhœa Alveolaris? Aside from danger from infection, which one of your patients would knowingly consent to your using compound or wax which had been used in the mouth of another, no matter how clean or healthy the mouth may have been?

I do not think modelling compound can be sterilized in the short time it is in contact with warm water. To destroy the life of many germs it would have to be boiled for such a length of time that the material would become useless. Wax may perhaps be rendered aseptic by long boiling, but this is not done by the majority of dentists, very seldom by any until it becomes necessary to eliminate plaster.

All colleges should teach students that it is almost as dangerous to use compound twice as it is to use instruments without being properly sterilized.

If some one better qualified to treat this subject than myself will devote some of his time to it, this short article will have served its purpose. It seems to me fully as important as many of the subjects recently brought before the notice of the profession through the journals. Much has been written on care in sterilizing almost everything we use in the office, even to the operator's coat, but little or no attention has been given to impression materials. It is of little use to sterilize your impression cups if the contents are not also pure and clean.

All dentists may not be guilty of uncleanliness in this respect, but I believe the majority are. Among them are many who are very critical on other points in office practice.

## HINTS FOR THE LABORATORY.

DR. JULIUS DEINELT, ALEXANDRIA, VA.

Having a few leisure hours, and feeling inclined to write, we present the following "Items" which, though perhaps not new to many, may be of use to some.

To prevent zinc dies from settling in the centre, pour out the first portion of your metal rapidly, and as soon as the impression part of the mold is well filled, direct the stream of zinc more slowly directly to the centre, slowing up more and more, as the surface is reached, and when reached—by which time the cast is beginning to harden on the outer margin—let the metal fall drop by drop; and as by this time the zinc is liquid in the centre only, continue the process till there is a slight bulge. When cooled, you will have a perfectly level die, with no chance of giving way in the centre, on account of its hollowness, as so often the case.

If by carelessness or otherwise an important tooth breaks off your plaster model, notch both ends slightly with the point of an old excavator, and having carefully removed the chips, so that the broken ends come together accurately, mix some oxyphosphate very thin, and apply to the broken parts, and then press them tightly together; set aside to dry. In an hour you may lift the model by the tooth alone, and it will not break.

As a plaster model to be cast in zinc, for swedging, should not be less than three inches thick, we always keep on hand two strips of oilcloth—any old piece not too much worn will answer—each about twelve inches long by three and a half wide, and cut in somewhat semicircular shape, so that it will come together funnel shape. This we secure, where the ends overlap, by simple clasps made of sheet brass or tin, or iron wire, as used for holding two pieces of gold together for soldering, and having placed our impression on a piece of tin, so as not to soil our bench by any plaster which may run out or possibly spill, we place the rim of oil cloth over it, the narrower part down, fill in the gaps around the impression with old cotton batting, and pour in the plaster to the height desired. When the plaster has hardened sufficiently, we draw the clasps, when the rim will come off clean, and by a little trimming we have a model which is easily removed from the molding sand. We have had two of these strips in continual use for over thirty years before we were obliged to renew them.

While preferring gold in every case where the patient's purse is able to bear the expense, believing that gold will ever remain the peer as a base for artificial dentures, as it also will as a filling material, we nevertheless are often obliged to use the vulcanite for cheapness' sake. When we do, we use single teeth exclusively, for we have found by long experience that they are more pliable, and by proper manipulation we are able to produce a result unattainable by the use of gum sections. These sections are unwieldy, and generally the bicuspids project too much, so it is impossible to give to the mouth its proper expression. How different with single teeth? In the hands of an artist, one who has made the human face divine a study, and by the use of the best pink rubber, which should be neatly carved in imitation of natural gums, a most life-like set of teeth may be produced, and which, by the addition of gold lining, will look quite respectable.

At one time we had great hopes of celluloid, of which a beautiful denture may indeed be made. We have long since abandoned it; for, what is the use of making well fitting plates, when they will warp afterward in the mouth, and give us and our patrons endless trouble?

For the last ten years we have not taken a single impression in plaster, which is so exceedingly disagreeable to most persons. We use modeling compound, and we unhesitatingly pronounce it far superior to plaster in every respect. Of course, it requires proper manipulation, which is only attained by experience. We would advise all who have not used it to give it a fair and patient trial. They will soon learn to use it, while their patrons will thank them for dispensing with the nauseating plaster.

Sticky wax, for holding in place clasps and teeth, previous to soldering, is best made of rosin two parts, and bees wax one part. Melt your rosin first, in a tin cup or an old dipper, then add the wax and stir till well mixed, and pour in a basin of cold water. Take up a piece about the size of a walnut at a time, and roll out with your hands on a smooth surface into pencils; care must be taken to keep the fingers moist, or the mixture will stick. This is the best preparation we have ever used, and it may be melted over and over again.

As the frosty season will soon be here, it may be well to know how to keep the hands from chapping. The plan we have followed for years is a sure one, and requires no lotion of any kind. Most people, when the weather and water are very cold, having soiled their fingers, immerse these only, carefully keeping the water away from the rest of the hand, when the skin will invariably chap, and the soap or the frosty air receive the blame. If any washing is needed, do not be afraid of the water, but see that the entire hand is covered with water, and though you may be in the open air at the time, and careless in wiping your hands dry, they will be free from chapping the entire winter.

Where most of the alveolar ridge has been absorbed—especially the lower—it is often difficult to keep the plate in place, but a firm adhesion may be obtained by the following method:

After your plaster model is nearly dry, mix some plaster very thin, and with a fine camel's hair pencil, build up a half round ridge, about the width of an ordinary knitting needle, all along the highest part of your model, or what is left of the original ridge, leaving off about a quarter of an inch from the end of the previously marked-off plate, on both sides, or the object will be defeated. Never wet the model, or your plaster will run where it is not wanted, while, when dry, you can guide your plaster with the pencil and build up a neat and even ridge; a very important point in taking the model from the molding sand afterward. The work should be performed neatly and rapidly, adding a little material at a time, till the ridge is finished to your satisfaction; when finally your plate is struck up, and while trying it in, you will be surprised to find how firmly it will adhere, by means of this narrow and continuous air-chamber.

The same process will hold good in rubber plates, but the model should be more thoroughly dried, to prevent the sticky base-plate from injuring the ridge. For troublesome shallow plates, already in the mouth, we would suggest the forming of a hollow ridge by means of an engine bur. We have used this process for lo! these many years, and have always found it a success in even the most desperate cases.

## EDITORIAL THOUGHTS FOR THE NEW YEAR.

Men sigh for what they have not; but what right has a man to ask for better things than he enjoys? If he be a man he should obtain them by his labor. He should consider first if he deserve these better things which he sighs for. He should know that life is not for him to pick and choose that which is the easiest and most agreeable; but to stick to the calling to which he is best adapted, and to leave no stone unturned whereby success may be assured; to do with all his might whatever he has undertaken, that he may thereby give his quota to the world's general offerings. Ambition may make us vain, may make us unjust, may make us tyrants, but there is a laudable ambition which all should have who do battle in this world:

"In the world's broad field of battle,
In the bivouac of life,
Be not like dumb driven cattle,
Be a Hero in the strife."

If we consider what men have done for us in this life, the many comforts, advantages and conveniences they have afforded us by their persevering labor, we would not sigh for what we have not, but work unceasingly and bravely that we too should be a contributor, and this thought should be an ever present prompting, a goading incentive to do also for our fellow-men. Do not take all and give nothing! We despise the man who is always ready to accept yet never ready to give. Try to be of use in this world in any calling you may have embraced, and let something you may do be your offering to the general collection. Your path may be beset with difficulties, but who cares to do easy things? It is the overcoming of difficulties that is the prompting in any business. As long as the puzzle is to be discovered, so long is the excitement enhanced, once it is attained it becomes insignificant. Is it a thing to be proud of only to do what is easy, or what we like; to satisfy all our whims, all our tastes, all our fancies? Self-abnegation and mortification are as necessary in this life as recreation and pleasure.

> "Not enjoyment, nor yet sorrow,
> Is our destined end or way,
> But to act that each to-morrow
> Finds us farther than to-day."

"Can't" has always been conceded a bad word, and those who use it should expunge it from their vocabulary. Men should not do things because they are easy, they should try to overcome difficulties and master that which seemed an impossibility. When a man yields to his indolence, to his temptations, to his weakness, and shelters himself under that common phrase "I can't," he is no longer a man, he is a coward.

## THE PRACTICAL PLACE.

### Hints to Advertisers.

World's Medical and Dental Combine!!!

Combination of the World's Marvelous Men!!!

*Branches of our "Parlors" in all parts of Europe, Asia, Africa, America and Mars.*

Get one of our "Cobble-Stone Chewer" Sets of Teeth. They bite, you bet!

$10 sets for $5.
$5 sets for $3.49.
$3 sets gratis, with a Free Lunch.

Teeth and Corns Extracted with Musical Accompaniments

Only *Sacred Music* with extractions on *Sundays.*

Babies Vaccinated on Bargain Days Free.

Our "Universal Cosmical Cure-All" will revive the dead—dead beats, dead heads and dead drunks.

We use the X rays. It helps us to raise the wind in warm weather.

Balloons and Bicycles ready, with our Associates in full war-paint, Local Anæsthetics, Forceps and Life Insurance Policies.

To meet the demands of busy men our Experts will fill or pull your teeth on the cars.

We sleep in sterilized linen, and speak sterilized grammar.

And Don't you Forget it! See?

We've Syndicates for Sugar,
And we've Syndicates for Shoes,
We've all sorts of monopolies
Of every kind you choose.
But of all the brilliant fancies,
Which take the cake and wreath,
There's nothing half so clever
As our Syndicate for Teeth!
Teeth! Cheap Teeth!
The whitest you ever met.
You can chew when you're blue,
Or bite when you're tight,
And only $3.00 a set!

### FORMULA FOR ODONTALGIA.

The following remedy for odontalgia pulpitis has been employed with good results by Dr. S. Wotjoff:

| | | |
|---|---|---|
| ℞ | Cocaine hydrochlorate, .................. | 0. 1. |
| | Camphor, .................................... | 5. |
| | Chloral hydrate, .......................... | 5. |

To this mixture add a few drops of water, thus producing a clear liquid. Saturate a pellet of cotton with the remedy and insert it in the aching tooth and permit it to remain about one day. If the pain still continues renew the treatment and the ache invariably ceases. The author has resorted to this drug in many severe cases, and has met with exceedingly satisfactory results.—Translated by Dr. B. J. CIGRAND from *Zahnarztliches Wochenblatt, August, 1896.*

### CHLOROFORM AND ROOT-CANAL TREATMENT.

Dr. Cohn, of Berlin, says: "The treatment of root-canals having putrescent contents is familiar to all, especially that relative to proper disinfection and necessary reaming. Notwithstanding the numerous remedies employed, a new medicament is in demand, since present treatments are not entirely satisfactory. I have of late made many experiments with chloroform and must say have effected grand results. The following three points I have observed as worthy of note: 1. That chloroform possesses powerful antiseptic properties and excels many drugs now employed in destroying bacteria. Further, it has the advantage of not coagulating albumen, and in consequence does not hinder, as does carbolic acid, a perfect antiseptic effect. 2. Chloroform, as is well known, softens fatty matter, and, as there is present in putrescent pulp considerable fatty substance, the chloroform will materially aid in softening the fatty contents, and in consequence be converted from a papescent to a liquid condition. I also learned that the canals were cleansed more readily by employing chloroform, and the dryness which results is an additional advantage in case the canal is to be immediately filled. 3. If you employ a pellet of cotton saturated with chloroform, and perfectly seal it in the root-canals, the vapors of chloroform will permeate to the farthest extremity of the root and thus perfectly antiseptisize the canal. Sealing the chloroform in the pulp chamber should not be done until you have first employed it in eliminating the putrescent pulp; its subsequent use is to assure thorough disinfection of the canal. In short, I administer the chloroform much after the same manner as we do carbolic acid, or any of the other generally employed agents." —Translated by Dr. B. J. CIGRAND from *Zahnarztliches Wochenblatt*. *September, 1896.*

## ALCOHOL AS AN ANTIDOTE TO CARBOLIC ACID.

Recently a woman in an attempt at suicide drank over an ounce of carbolic acid in a tumbler of whisky. The immediate service of Dr. Fraser was secured, but he was completely at a loss as to the cause of the patient's ailment. The bottle containing the acid was found close at hand, however, and the doctor recognized in the patient's breath the carbolic odor, but what seemed to dumfound the physician was the fact that the mouth, lips and tongue were free from the escharotic effects of the drug. He immediately flooded the stomach and continued to rinse the same until he had liberated the acid vapors. The patient was soon resuscitated and eventually fully recovered. Since this experience, Dr. Fraser has made many discoveries relative to carbolic acid antidotes, but the one fact which will interest the dental profession most is that in the event of the unfortunate circumstance of accidentally applying carbolic acid on a patient's lips or skin, he recommends bathing the burned surface with alcohol, whereupon immediate relief is rendered and the eschar readily disappears. —Translated by Dr. B. J. CIGRAND from *Zahnarztliches Wochenblatt*, *September, 1896.*

## WHAT IS ASBESTOS, AND WHERE IS IT FOUND?

Asbestos has been found in all quarters of the globe. It comes from Italy, China, Japan, Australia, Spain, Portugal, Hungary, Germany, Russia, The Cape, Central Africa, Canada, Newfoundland, Texas and other parts of the country. Geologists classify it among the horn-blenders. In itself asbestos is a physical paradox, a mineralogical vegetable, both fibrous and crystalline, elastic yet brittle, a floating stone, but as capable of being carded, spun and woven as flax, cotton or silk. It is apparently a connecting link between the vegetable and the mineral kingdom, possessing some of the characteristics of both. In appearance it is light, bouyant and feathery as thistledown; yet in its crude state it is dense and heavy as the solid rock in which it is found. Apparently as perishable as glass, it is yet older than any order of animal or vegetable life on earth. The dissolving influences of time seem to have no effect upon it. The action of unnumbered centuries, by which the hardest rocks known to geologists are worn away, has left no perceptible imprint on the asbestos found embedded in them.

While much of this bulk is of the roughest and most gritty materials known, it is usually as smooth to the touch as soap or oil. Seemingly as combustible as tow, the fiercest heat cannot consume it, and no known combinations of acids will destructively affect the appearance and strength of its fibre, even after days of exposure to its action. It is, in fact, practically indestructible. Its incombustible nature renders it a complete protection from flames, but, beyond this most valuable quality, its industrial value is greatly augmented by its non-conduction of heat and electricity, as well as by its important property of practical insolubility in acids.—From the *Popular Science News.*

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## BOOKBINDERS' GLUE.

Soak 4 parts of best glue in 15 parts of cold water over night, and then warm the mass slightly until it makes a clear solution. Then add 65 parts of boiling water, with constant stirring. In another vessel mix 30 parts of thick starch paste with 20 parts of cold water, with constant stirring, and pour the mixture into the boiling solution of glue. Add for each pound of the mass $\frac{1}{2}$ drachm of carbolic acid to prevent fermentation, and 1 drachm of glycerin to prevent brittleness.

## New Way to Administer Chloroform.

Dr. H. L. Northrop has discovered a new method of administering chloroform, which, it is asserted, is less dangerous than the old, and is not accompanied by the nausea and other evil effects that have made its administration so unpleasant.

He says: It is a vapor of oxygen passing over into a bottle of chloroform and then conducted to the patient, who inhales the gas mixed with the vapor of the chloroform. It takes three and a half minutes to bring about complete unconsciousness. When two drachms of chloroform are used a patient will remain unconscious long enough for the performance of a half-hour operation. To resuscitate the patient, pure oxygen is administered, and consciousness is brought back in a minute with not a single evil effect. The patient feels just as well as if there had been no chloroform administered. When the chloroform is administered by this method the respiration is scarcely accelerated, and the breathing is strengthened by the use of the oxygen. The pulse does not vary four beats from normal. Ordinarily it has been considered dangerous to administer chloroform to patients with slight heart trouble. Administered in this new way it does not seem to affect them at all. Patients have submitted to an operation and left the hospital the same day when the chloroform was administered by this method. This was impossible before, for it took from one to three days to fully recover from the effects of the chloroform.—*Exchange.*

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## New Local Anaesthetic.

Dr. K. L. Schleich, of Austria, produces perfect immunity from pain by subcutaneous injections of a sugar or a salt solution, or of merely cold distilled water. He adds: "The patient may remain perfectly unconscious during the amputation of hand or foot without any of the dangers accompanying general narcosis.'' The phenomena is explained as follows: Local insensibility to pain is induced by cocaine by purely mechanical changes, while cold water and solutions of sugar and salt act mechanically through high pressure and low temperature. Under these influences the blood and lymph are driven from the places operated on to where the pressure is less. The tissues are thus deprived of their supply of blood, and temporary paralysis of the nerves result.—*Medical Age.*

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## Citric Acid in Diphtheria.

For many years an English physician has used pure lemon juice as the best tonic for diphtheria and sore throat in general, and mentions a case in which the son of a medical man in one of the Paris hospitals cured himself of diphtheria by constantly sucking oranges or lemons; a small basketful of which was placed for this purpose at his bedside. A Danish physician, Dr. Bock, recommends a ten per cent. solution of citric of acid, to be given in spoonful doses every two hours.—*Items of Interest.*

### A New Treatment For Boils.

Dr. Bower recommends for boils and carbuncles a preparation made by moistening one part of camphor with a few drops of alcohol, and rubbing in a mortar with one-fourth part of salol, till a transparent fluid is obtained, which he calls camphorated salol. On its application on cotton protected from evaporation, a change usually takes place in from twelve to twenty-four hours; pain diminishes, and the tumor becomes progressively smaller, without the formation of pus.—*Items of Interest.*

### Investing Material.

Mr. Girdler uses the dust of burnt anthracite coal, instead of sand or asbestos, in conjunction with plaster, for investing cases for soldering. With this soldering composition he finds that the plaster rarely cracks.—*Ash's Quarterly.*

### Cleaning the Hands.

To remove the black grease from the hands after handling flasks, use a small quantity of spirits of turpentine. Rub this well all over the dirt, then wipe with dry cloth, then use soap and water. After drying, use vaselin or glycerin. I have found this to be an excellent remedy. Try it.—J. H. Drexler.

### Removing Stains.

A solution of hyposulfit of sodium in water will remove iodin spots from linen, cloth, skin, in fact from everything, almost instantly. The fresher the spots the quicker the action of the hyposulfit. This may be a welcome item to some.

With my best wishes for your very welcome journal.—J. C. Emmerling, Milwaukee.

### Taking Impressions.

In taking impressions for a full upper denture, take impression first with plaster; scrape the palatal surface of the impression; take a thin sheet of imp. comp., or wax, to fill the scraped surface; warm the imp. and press it to place in the mouth. The result is a perfect impression that requires no carving or scraping.

### A SIMPLE SALT AND WATER INJECTION IN PLACE OF TRANSFUSION.

Washing the blood is the latest remedy for diseases brought on by or causing a sluggish circulation and low state of the blood. The washing process is performed by plain salt and water. From a pint to two quarts of water is injected into the system by means of an ordinary hypodermic syringe.

A vein is opened in the arm of the patient with the usual antiseptic precautions, and the salt water injected in large doses. A profuse perspiration and general activity of the secretory organs follow, carrying away the noxious matter present in the blood. The new remedy is recommended by several doctors in papers read recently before the Academy of Medicine in Paris, and has been successfully employed in numerous instances. In anemia, typhoid, hemorrhages, sudden shock, and even in intoxication, this blood washing, it is said, works wonders. For some years surgeons have used a salin injection in collapse after an operation. It is the most powerful tonic known, and has saved many lives. Its efficacy in ordinary diseases has, however, only recently been discovered.

Modern medicine has a tendency to resort to simple methods which recognize the all-curing powers of water. Washing the stomach, as practiced by several New York physicians, is of a very recent origin, and is considered invaluable in cases of indigestion. A simple bath of warm water is often all that is necessary to restore the stomach to its normal condition, by removing the poisonous waste products which are not profusely thrown off by the secretory organs. By means of a soft rubber tube put down the throat water can be poured into the stomach and siphoned out again. To wash the blood is, of course, more difficult, as the water has to be injected into a vein.

It is well known that the blood of a frog can be drawn off and the blood of another frog substituted without greatly inconveniencing the creature. It was then found that a salt water solution can be substituted instead of blood, to a considerable extent, at least, and the frog will live and be as sprightly as ever. This fact first gave the scientists the idea of injecting an artificial serum into the veins of a human being, either anemic or intoxicated. The new remedy is very simple in its action, and can always, it is said, be employed with safety.—*Washington Star.*

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## DON'T HURRY.

It is a mistake to attempt to operate too rapidly. It encourages a high pressure habit that will make a cyclonic terror of you. There will exist around you a zone of low barometer, that will make sensitive people know that a hurricane is impending. They will think of the "quick and the dead," which means, when translated, "quick operator, dead patient!" Your fingers will fly about their mouths in a manner to suggest forked lightning. While your hair flies in the breeze your motions make, theirs will stand on end.

You may be able to do good work (which is doubtful), but why be in such a disagreeable hurry about it? Haste is vulgar. It takes several generations of good breeding to produce the unconscious composure that marks a gentleman.

Rome was not built in a day, though it was burned in a night. No great work of art was ever hurried. The great masters had no time to waste in haste. Some of them were doubtless humbugs, and they have all, in this age, been worked for all they are worth, yet the fact remains that living before industrialism had swept over the earth, and before the subjugation of the electric current, they found time to work out their highest conceptions, and the world is immeasurably richer because they lived.

The assertion is probably a safe one that any work of art, in any of the great departments of art, that does not produce on the mind a feeling of composure and restful completeness, falls short of being truly great. This applies to painting, sculpture, and architecture, with equal force.

When applied to our profession the analogy, of course, is not quite fair, for dental operations are produced for practical purposes, and artistic feeling cannot always be expressed in them; yet there is some reason for the comparison, for a regard for the law of art in their performance will often produce the very best practical results.

Dr. Edward Maynard would have been a great artist in any department of pure art, and his artistic temperament made him, considering the primitive conditions under which he worked, one of the greatest dentists the profession has produced. Patient deliberation was the keynote of all his work. Instead of scaring his patients by a nervous manner, he exerted over them a quiet influence, and hypnotized them into a state of confidence, so that he could accomplish artistic and lasting work for them.—*Cosmos.*

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### How to Treat Sensitive Dentine.

Carefully selected, well-shaped, small and sharp instruments, with a well-trained hand, are more than half the requirements of painless work. I regard a well adapted instrument of small size of more importance than medication in sensitive dentine. Last winter I commenced using sulphuric acid, preparatory to filling roots, and observing its anæsthetic effect I tried it on sensitive dentine, with enough success to embolden me to further use it. Now, with few exceptions, I am able, with its use, to operate on the most sensitive teeth without discomfort to the patient.

At my chair I have a syringe nozzle connected to a handle; this is connected by a flexible pipe to a large cylinder (built like the air-chamber to an ordinary hot-air syringe), which is heated by a movable flame, so that the air can be heated from moderately warm to hot. Back of the cylinder, in connection with it, is a chamber into which I put my medicament. This is controlled by a two-way cock; a lever of this cock is within easy reach of the chair, and by operating this lever I can allow the air to pass through the medicament, or not, as I choose. This, in turn, is connected by a system of pipes, to the laboratory water motor, which operates an air-pump. By starting the water-motor I can force a continuous stream of hot air, medicated or not.

After adjusting the rubber-dam, or using some other means of preventing moisture from entering the cavity to be operated on, I turn on the air-blast and thoroughly dry the cavity, then I put in a drop of sulphuric acid. After waiting a moment I wipe out all surplus, and with the warm air blast dry, after which, with small, sharp burs (or excavators) I can excavate without discomfort. After excavating I usually place a portion of unused soda to neutralize any acid that may be present, and proceed to fill with whatever material my judgment dictates.

The medicament used in the chamber spoken of is composed as follows:

Carbolic acid,
Oil cloves,
Oil cajeput ..................................aa ℥ j.
1, 2, 3, mixture ..................................℥ j.

The use of which is to allay the discomfort sometimes caused by the blast of air on the dentine, and I find it very efficient.—By Dr. A. H. Butterfield, Stamford, N. Y.

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## Directions for the Use of Eucaine Hydro-chlorate in Dentistry.

1. Dissolve 1 gram (15 grains) of Eucaine in 10 grams (150 minims or 2½ fluidrachms) of distilled water and boil the solution. The solution should be perfectly clear and is best preserved in a glass stoppered bottle holding about 12 grams (3 fluidrachms).

2. Thoroughly disinfect the mucous membrane before the extraction by cleansing it vigorously with tampons of absorbent cotton soaked in peroxide of hydrogen, ½ to 1 per cent. trikresol, or other antiseptic solution. Before making an injection care should be taken to exclude any air contained in the syringe. This is accomplished by holding the syringe, needle upwards, and allowing a drop or two of the solution to ooze out.

3. Insert the needle of the syringe close to the edge of the gum and never any higher than half-way the alveolar process. Enough fluid must be injected to whiten the mucosa in the immediate neighborhood of the puncture and cause a slight elevation and no more. The dose of a single injection is from 3 to 6 or 8 drops of the ten per cent. solution. The exact quantity to be employed depends upon the thickness of the mucosa of the gum, the depth of implantation of the tooth, and the degree of the inflammation, etc. Two buccal and one lingual injection must be made in each case. *It is very important that the injection be not made at the point of junction of the alveolar and buccal mucous membranes.*

4. Extraction is to be done as soon as the patient himself feels the anæsthesia, which is in about one minute, and not immediately after the injection. It should be done carefully and without the excessive application of force.

5. After the bleeding has ceased, *the remaining Eucaine solution must be removed by puncturing the site of the injection with the needle and making digital pressure upon the gum.*

6. Every extraction with resection is followed by some little swelling. When a good deal of Eucaine has been employed, and when some of it has gotten under the mucous membrane lining of the bucco-alveolar furrow, we must warn the patient that there will be some swelling, which, however, will be entirely painless and will retrogress spontaneously in one or two days. The œdema thus set up is entirely harmless, it disappears quickly and without pain, and is never accompanied by any by-effects.

The above 10 per cent. strength has been recommended by Dr. L. Wolff, owner and chief of the Dental Clinic, Wedding, Berlin, after an extended experience with Eucaine. Other dentists, however, who have also used Eucaine, found that a 3 or 4 per cent. solution is fully sufficient. The syringe, needle, lance, and beaks of forceps must be thoroughly asepticised with alcohol, trikresol or carbolic acid solution. Dry the gum with absorbent cotton and disinfect the mucous membrane with peroxide of hydrogen, trikresol or other antiseptic solution. Then insert the hypodermic needle till the point only is buried in the gum tissue and inject till a slight swelling or whiteness is seen. Usually two or three punctures are necessary on both sides of the gum to produce this whiteness. If Eucaine is used in 3 or 4 per cent. solution, from 10 to 20 drops will be sufficient for each tooth. After bleeding has ceased, press the gum tightly with your fingers and replace the alveolar walls, which may have become distended during exit of the tooth from its socket. Any number of teeth can be extracted at one time. It is recommended after the injection of Eucaine into the gums, to rinse the mouth with cold water, thus removing the superfluous Eucaine. Thereafter the gums may be loosened around the tooth by means of a lancet, which will not only be a test for the perfect anæsthesia, but will also prevent any tearing of the gums which, after the injection, are becoming hard. If a number of teeth are extracted at one time, the patient should rinse his mouth after extraction with as hot water as he can tolerate, whereby the blood vessels are opened and the Eucaine will be partly removed. It is further advisable to ask the patient to rinse the mouth after reaching home with hot water in which some borax or other antiseptic is dissolved.

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To prepare permanent solutions one part of Eucaine should be dissolved in ten parts of sterilized water. Such solutions remain perfectly clear for an indefinite period of time.

It should be noted that the strength and doses of Eucaine employed by dentist Kiesel in his first experiments were rather excessive and may, therefore, be much reduced, since Eucaine is as powerful an anæsthetic as cocaine. Dentists who have formerly employed cocaine for extractions can use the Eucaine in the same dilutions with equally good anæsthetic effect.

If unpleasant symptoms should be caused by an overdose of Eucaine, the remedies to be employed are the same as those used for cocaine under similar circumstances. The cardiac stimulants, caffeine, strophanthus, digitalis, strychnine, amyl nitrite, alcohol or alcoholics, ether or ammonia are indicated; in cases of emergency, nitro glycerin may be given hypodermatically. Strong black coffee is a readily available and efficacious remedy.

## Destroying Nerves Painlessly.

A great deal has been written on the subject of devitalizing the nerves with arsenic, and while it is our only specific agent for that work, it has been difficult with the formulas offered to accomplish the work painlessly. Therefore, I offer here a formula which has proven, in my hands, to be absolutely painless: Take a small quantity of arsenic and about the same quantity of muriate of cocaine, (crystals,) and mix with sufficient creosote to make a thin paste. Saturate a small pellet of cotton with the paste and apply it over the nerve. Secure the cotton in place with an oxyphosphate filling and allow it to remain three or four days. Upon removing the treatment, the nerve will be found to have died painlessly, and can be removed with a broach or other instrument painlessly.

G. Chisholm, *Birmingham, Ala.*

Have done the same thing often successfully.—Ed.

## A New Filling Material.

The combination of silex, oxide of zinc and gutta-percha was found to be good to resist mastication; but the silex, being so gritty, the burnisher left a black mark on the surface of the filling. Many other combinations were tried, but did not meet with satisfactory results until I tried the combination of

| | |
|---|---|
| White gutta-percha, | eight parts. |
| Aluminum filings, | five parts. |
| Oxide of zinc, | one part. |
| Whiting, | one-half part. |

This admixture I have been very much pleased with, and have named it "Aluminized Gutta-percha." It is easily manipulated, and holds its position in the cavity when firmly packed. I have not noticed any bulging, which is so common in the pink gutta-percha.—Dr. F. W. Bliss, *Pacific Stomatological Gazette.*

THE

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FOURTH SERIES.

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[TWENTY-NINTH PAPER.]

# LEADING QUESTIONS AND ANSWERS FOR DENTAL STUDENTS.

By Theodore F. Chupein, D.D.S., Philadelphia, Pa.

Q. What is the normal appearance of the saliva?

A. The saliva in good healthy constitutions has a white, frothy appearance with little viscidity.

Q. What do you mean by viscidity?

A. Viscidity means sticky, glutinous, ropy or tenacious.

Q. Does the saliva ever become viscid?

A. Yes. Inflammation of the gums causes the saliva to become viscid and ropy; and the more viscid, the less frothy it is.

Q. Has the saliva any odor?

A. It is without odor and when healthy and frothy it floats and readily mixes with water.

Q. Does it not do this when in a viscid or unhealthy condition?

A. It does not mix readily with water when viscid and it sinks.

Q. Does anything we take in the mouth cause the saliva to flow or become viscid?

A. Yes. Articles of a pungent nature both increase the flow of saliva as well as make it viscid.

Q. What do you mean by pungent?

A. Anything (in reference to taste) which produces a biting, pricking, painful acrid sensation.

Q. Can you mention some articles which produce this sensation?

A. Radishes, pellitory root, ginger and other articles are pungent in their nature.

Q. Does any other condition increase the flow of saliva and render it viscid?

A. Yes. A diseased condition of the gums, aphthous ulcers, inflammation of the mucous membrane or the administration of mercury into the system, will increase the flow of the saliva and render it viscid.

Q. What do you mean by aphthous ulcers?

A. These ulcers are generally associated with early infancy and childhood, the result of some felrile condition. With the former they have the symptoms of thrush, with which disease, however, they are not to be confounded. Aphthous ulcers are small, whitish or pearl colored oval or roundish pimples, which form on the edges of the tongue and on the mucous membrane of the mouth, giving rise sometimes to pain, but more often only to discomfort. Adults as well as children are liable to have them. In adults they are thought to be occasioned by the irritation of decayed teeth, but more often to a heated condition of the system, felrile systemic condition, or a more than normal acid condition of the gastric juice. When these ulcers locate themselves near the fauces they interfere with and cause painful deglutition. The cause of the presence and formation of these ulcers is not well understood, but is generally ascribed to a vitiated condition of the humors of the body.

Q. What is the treatment for these ulcers?

A. The local treatment is to swab them with a mixture of honey, alum and borax, one-half honey, one quarter each of powdered alum and borax, applied by means of a swab or camel hair pencil to the ulcers. The systemic treatment is by means of small doses of magnesia—Philips' Milk of Magnesia being a good anacid.

Q. Why should the introduction of mercury into the system cause the saliva to flow more profusely?

A. Because it is the nature of the drug to act on the salivary glands: and cause this flow.

Q. Why is the drug called mercury?

A. The etimology is uncertain and obscure. The drug is known as hydrargyrum, quicksilver as well as mercury. The technical name being hydrargyrum, derived from two Greek words signifying "Silver-water." But why the name mercury should have been selected for it, no information on this subject has been vouchsafed to us. Mercury, as we know, is a god, in Grecian mythology the son of Jupiter and Maia. He was the patron god of many attributes, presiding over commerce, wrestling, gymnastics and all things requiring skill and dexterity. He was the winged or telegraphic messenger of his father, Jupiter, and was furnished, to aid his quickness, with wings on his feet and on his cap. He invented the lyre, which it is said he did four months after his birth. Having found a tortoise shell, he made holes on the upper and lower edges and, stretching nine cords through these holes, he was able to produce sounds. It is said that he used nine cords in honor of the nine muses, but when finished he gave this lyre to Apollo, who presented him in return the Caduceus. The Caduceus was a wonderful and powerful wand. It was a rod entwined by two serpents surmounted by two wings and represented activity, celerity, power, diligence and wisdom; but in all these things we can see no reason why the name mercury should have been given to the drug.

Q. Are there any ordinary conditions which affect the flow of the saliva?

A. There seems to be a sympathetic action during pregnancy affecting the flow of saliva. This continues sometimes from the time of conception until delivery. A weakened condition of the digestive organs also affects the flow of the saliva. Hysteria, mania, hypochondriasis, or any abnormal obstruction of the abdomen is liable to increase the salivary flow.

Q. Is the flow of saliva always regarded as detrimental?

A. No. In confluent smallpox it is to be regarded rather as a favorable indication, and a dryness of the mouth is deemed unfavorable. In intermittent fevers the profuse flow of saliva is regarded critical, particularly when such fevers terminate or indicate dropsy.

Q. You spoke of confluent smallpox—what do you mean by that?

A. When the pustules of this disease run from one to the other and do not remain separate, they are designated in descriptive pathology as "confluent," meaning to coalesce or to blend.

Q. Suppose the saliva is flowing normally, or profusely, should cease suddenly, what is this indication?

A. This would indicate a critical condition and reasons for fearing brain trouble.

Q. What is the condition of the saliva in smallpox, hectic fevers or typhus fever?

A. The saliva in these diseases is thick and viscid.

Q. Is it always thick in disease?

A. No. In ptyalism the saliva is thin.

Q. Are these the only indications of the saliva?

A. No. When the liver is involved in any stomach trouble the saliva assumes a yellowish or greenish color, from its admixture with the bile, or if admixed with the blood it assumes a reddish color. In pregnant women it sometimes takes on a milky color.

Q. What do you mean by ptyalism?

A. It means an excessive flow of the saliva, sometimes accompanied by a coppery taste in the mouth and a loosening of the teeth.

Q. How do you pronounce the word?

A. As if it were spelled "Ti-al-ism."

Q. What is the indication of a very frothy saliva?

A. Apoplexy, epilepsy, hydrophobia, hysteria, etc.

Q. What is the indication of acid saliva?

A. It is regarded as an indication of gastritis or deranged digestion.

Q. How is it determined if the saliva be acid?

A. By means of blue litmus paper.

Q. May not the saliva be alkaline as well as acid?

A. It may.

Q. How may this be determined?

A. With red litmus paper.

Q. How are these conditions indicated by these different colored litmus paper?

A. If the saliva be acid it will turn the blue litmus paper *red;* if it be alkaline it will turn the red litmus paper *blue.*

Q. What is litmus and litmus paper?

A. Litmus is a blue pigment obtained from a lichen which grows on the Alps and rocks of the sea, in various parts of the world. It is prepared principally in Holland. This specie of moss or fern adheres with considerable tenacity to the rocks on which it grows. It is coarsely powdered or shredded and permitted to macerate for several weeks in a mixture of urine, lime potassa or soda, with occasional agitation. After this treatment fermentation is observed, when the mass becomes first red and afterwards blue, when it is mixed with lime to give it consistency. From this product blue litmus paper is made, by steeping unsized paper in a liquid formed of one part of litmus (as described) in twenty parts of water, and afterwards drying. To prepare red litmus paper the process is the same with the exception that the liquid is reddened by adding sulphuric acid to it before steeping the paper into it.

Q. Do any of the temperaments indicate the condition of the saliva?

A. Lymphatic and bilious temperament generally have acid saliva, than persons of sanguine dispositions, and people with weak digestive ability also show acid saliva.

Q. In which persons do we observe a normal condition of the saliva?

A. Those persons who enjoy good health, whose stomach, lungs and other organs are perfect and perform their regular functions, we find the saliva only moderate in quantity and frothy in nature, as it should be.

Q. What makes the saliva frothy?

A. As it enters the mouth from the salivary glands it only remains in the mouth for a short time, when it is mixed with a small quantity of mucous and some atmosphere which imparts to it the frothy condition.

Q. What makes the saliva ropy or stringy?

A. It is when the saliva is mixed with a large quantity of mucous that it assumes this condition.

Q. Is this kind of saliva frothy?

A. No, it is not; but it is sticky. The glutinous condition prevents the admixture of air. In this state it is mixed with azote, sulphur and only a slight trace of oxygen, and when placed on silver discolors this metal, showing the presence of sulphur.

Q. What is azote?

A. It is one of the constituents of the atmosphere. It is also called nitrogen.

Q. What do you mean by gastritis?

A. An inflammation of the stomach.

Q. Does the viscidity of the saliva produce other conditions than those referred to?

A. Yes. Languor, general depression, anorexia, headache, diarrhœa, and rapid decay of the teeth, have been noticed as being common with persons subject to great viscidity of the saliva. In persons thus affected, it has also been observed that green stain is liable to deposit on the teeth and corrode the enamel.

Q. What do you mean by anorexia?

A. It means want of appetite or a disgust for food.

[To be Continued.]

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## A POINT ABOUT REGULATING THE TEETH.

By Theodore F. Chupein, D. D. S., Philadelphia, Pa.

It has been observed by us, and doubtlessly by many other dentists, that when a tooth has to be moved from the front of the mouth backward, in other words when the solid part of the bone is forced, by the pressure of the regulating appliance to absorb away or yield to the constant traction of the screw, spring, or elastic, that the advance is *slow* and *tedious,* requiring many months to gain only a small space. This is not the case when the tooth has to be moved from the back of the mouth forward, because the bone in front being thin it is comparatively weak, so that the movement of the tooth is comparatively rapid. The above movements are more readily accomplished in the young patients because the bones at this time of life have not attained the solidity of later life. We have likewise observed that when a cuspid—which is generally the most difficult tooth to move—has to be forced backward, and made to occupy the position of the first bicuspid, in order to regulate a protruding or ingrowing lateral incisor; that when the first bicuspid is extracted, which leaves only the thin septum of the alveolus of the first bicuspid and cuspid present, the movement is likewise greatly facilitated.

It is probably by the observance of these teachings that Dr. Eugene Talbot recommends the forming of such places by the dressing away of the bone in "the line of travel," as he instances in his article recently published in the *Dental Cosmos*, for November, 1896, for the regulating of the teeth of persons of more advanced life. Indeed we notice the same idea by Dr. W. H. Robinson, of Almeda, California, who practically recommends the same thing in an article published in the *Stomatological Gazette* for October, 1896. We cannot do better than to quote his own words:

"Mr. A., aged about 40, came to me to have a right superior canine straightened. It was so far inside that its labial surface was on a line with the palatal surface of the adjoining teeth, and the lower teeth shut outside of it. The tooth was very firmly set. Ordinary appliances moved it so slowly that two or three months would have been required in its locomotion. As the teeth could not be closed when this one was passing the line of the lower teeth, and would have kept the patient two or three months without getting his grinders together, I decided the operation was impracticable unless some new method could be devised to hasten matters. A few days before I had bored a socket and implanted a canine in a lady's jaw. Why not make a socket in the right location in this patient's jaw and move the obstinate canine into it? And this I did, going within, say, a line of the apex, removing the process and carefully guarding the pericementum of the tooth. The canine now moved easily and rapidly, and in about a week it was brought into its new location. Of course I aimed to move the apex as little as possible and exercised special care not to disturb its vascular connections. This method of tooth locomotion is, I am satisfied, very easy for both patient and dentist. Indeed, I am not certain but others may have resorted to it before now. I am quite sure that I will often practice it again in cases where teeth to be moved are firmly set."

## SELECTED ARTICLES.

### A NON-TOXIC LOCAL ANÆSTHETIC.

By W. H. Jones, D.D.S., Fultonville, N. Y.

Even the most conservative practitioner finds a non-toxic and effective local anæsthetic a grateful addition to the dental armamentarium. The greater number of our patients have often heard of having a tooth extracted painlessly, and as there are always occasions when a tooth has reached a condition where it is better out of the mouth than in it, so, when extraction becomes a necessity, the operator will be asked the question, " Can you put something on the gums to alleviate the pain ? "

The hypodermic injection of eucaine, combined as follows, will give a satisfactory and painless extraction, and the nervous and excited patient will never again postpone a necessary extraction, but will endure the next operation, should one be necessary, with unruffled nerves:

| | Grammes. |
|---|---|
| Eucaine hydrochlorate | 0.8 |
| Hamamelis Virginiana | 7.8 |
| Glycerole | 1.6 |
| Hydronaphthol sol | 0.129 |
| Guaiacol | 0.129 |
| Strophanthin | 0.013 |
| Aquæ dest | 19.5 |
| Saccharin ad grat. | |

The above formula has been used with unusual success for the past six months. There are many cases in which the operator does not care to administer nitrous oxide or ether, but owing to the nervous and sometimes debilitated condition does not wish to operate without alleviating the pain in some manner. A local anæsthetic is a useful friend in this extremity.

The point of puncture can be anæsthetized by touching the mucosa with a solution of trichloracetic acid, glycerol, and cocaine in the following proportions:

| | Grammes. |
|---|---|
| Trichloracetic acid | 1.296 |
| Glycerol | 1.944 |
| Cocaine | 1.620 |

If the gums are healthy, they are not very sensitive, and the puncture may be made by making a firm pressure with the index-finger of the left hand and placing the needle at the edge of the point of pressure. Disinfect the mucosa before proceeding to operate.—*International.*

[Eucaine hydrochlorate, pure and simple, in 10 per cent. solution, will act as benignly.—Ed.]

## NITRATE OF SILVER IN ROOT CANALS.

### By Charles D. Cheney, Hoboken, N. J.

The publication in your November issue of a paper upon a nitrate of silver method of root canal treatment decides me to give my own experience in the same direction.

I would state that I have been experimenting (if a steady reliance may be so designated) with silver nitrate for over two years. I have used it in root canals during about that period and have come to believe that in it we have as near an ideal as we are likely to get.

I have not before this publication seen or heard silver nitrate suggested for root-canal treatment; it was, however, but a short step for me from the use of it in an ordinary cavity of decay to use in the canals. I have used it with satisfaction in ordinary cavities for a number of years, and during the period of *canal* use my satisfaction has been infinitely increased.

I may say I consider pulp-extirpation and canal-filling more scientific than any method of so-called pulp-"capping," especially since silver nitrate makes the former operation practically successful and certain.

I have never seen any objectionable effects from its use in nerve-canals, or I believe I may say *any* "effects." The use of the nitrate when the pulp is but thinly protected by dentine is not to be tolerated, but I have not observed any irritation to the pericementum when the canal may have been large and the walls thin.

An important improvement which I very early discovered and have used exclusively since was the substitution of an alcoholic saturated solution of silver nitrate for the customary aqueous solution. This is an improvement which I consider essential to thorough success. Alcohol dissolves less of the nitrate, but the rapid evaporation compensates and makes a less quantity equally efficacious; the alcohol also penetrates farther and quicker than water; a warm-air blast or even a few moments' delay and the natural body heat gets rid of the solvent, and also any small degree of moisture which may be present, thus leaving a deposit of microscopic nitrate crystals to continue the effect very slowly as the natural moisture returns to the immediate vicinity.

Rather strange, it seems, but there appears to be within the canals none of the usual discoloration of silver nitrate, except in the presence of organic decomposition, when the precipitation of black oxide or sulphide is instantaneous. Decayed dentine is not so affected, though it often becomes slightly yellowed.

The silver nitrate seems to take such thorough care of affairs within the canal that it would seem less important what filling is used, provided it be non-absorbent and unchangeable. I have good success with gutta-percha, avoiding most religiously, however, all that which has any considerable "toughness,"—that is, a quality which is incompatible with its successful use in any way.

The painting of the surrounding gum with strong tincture of iodine, immediately after the filling, contributes in a large degree towards success and the comfort of the tooth, as I believe.

Occasionally the slight soreness due to the operation may persist over twenty-four hours, in which case I repeat the application of iodine or advise capsicum plasters, according to circumstances.—*International.*

# SIMPLIFIED TREATMENT OF TEETH WITH EXPOSED PULPS.

By Withold Lindemann, of Rybinsk, Russia.

The pulp laid bare during excavation is covered with iodol cement, which serves as a simple capping; this can, however, only be accomplished in those cases in which the exposed part has only the circumference of a point. The slight hemorrhage which occurs here almost regularly is stopped by means of carbolic acid solution, and any pain there may be is removed by the application of a small pellet of cocaine, or a strong solution of cocaine. Thereupon the neighboring carious parts are removed with the utmost care as far as this is possible.

For the present the cavity must not be dried out with hot air; but it is thoroughly syringed out several times with luke warm water in order to get rid of the congealed blood. A phosphate cement which does not set too quickly is then mixed with iodol (cement and iodol-powder in equal parts) to a very soft consistency; a mixture thus prepared is very sticky, and remains plastic for a considerable time.

The cavity is then rapidly and thoroughly dried with amadou, and a portion of the cement, the size of a hemp seed, is placed upon the exposed pulp. This iodol cement should be applied very lightly by means of a smooth stopper moistened with oil; directly the patient feels pain, the pressure must at once cease. The cement may also be pressed home by means of a dry pluglet of cotton-wool dipped in talc powder.

It is well only to close the cavity provisionally and not to insert the filling until the following day; the slight pains which are generally experienced during the setting of the cement will then gradually have passed away.

It will be observed that the cement has become sufficiently hard to protect the pulp against the pressure exercised during the insertion of the filling; the cement, however, is usually distributed too unequally in the cavity, therefore it has in part to be drilled out again —of course with great care, so as not to lay the pulp bare again.

As this mode of capping can be carried out without the employment of metal caps, it is especially suitable for all cases in which the small dimension of the cavity and also the approach to it do not permit of the application of a cap.

I have employed this method in many cases without meeting with any failures.

In places difficult of access, and also where pulpitis has appeared (even if of a slight character only), it is advisable not to attempt the capping at all, but merely to cauterize the pulp; for this purpose shreds of cobalt or arsenious paste may be used.

Kirk's arsenious paste (with a slight modification) one may prepare one's self, of an excellent quality, by extremely finely triturating in a porcelain mortar arsenious acid (two parts), which is difficult to pulverize, with one part of pumice and a little carbolic acid in such a manner that even with a 150 magnifying power no arsenic crystals can be distinguished; hereupon are triturated with the mass two parts of cocaine, and one part of menthol; other additions are superfluous. A very small quantity of this paste is laid upon a pellet of cotton-wool the size of a pin's head, and this plug is applied direct upon the exposed pulp. A temporary closure of the crown-cavity with sandarac or mastic solution, however, requires a little knack.

In order to avoid the inclosure of the paste, and prevention of its action by the resinous solution, the cotton wool soaked with the resin should never be laid direct upon the arsenious paste; the two plugs should always be kept separate by means of a pledget of cotton-wool moistened with water. The action of the arsenic will then be undisturbed, and the hardened resin will not exercise any pressure upon the pulp.

At the expiration of twenty-four hours the pulp in most cases will be so void of sensibility that it can be partly removed; otherwise the cauterization should be repeated.

For the removal of the pulp, I do not in such cases employ nerve extractors, but bore out the crown pulp by means of aseptic engine bur, and also partly the pulp of the root. It is not necessary for this purpose to introduce the bur deeper than from two to three mm. into the root-canal. The debris caused by the bur is removed by means of powerful syringing with warm water, whereupon the cavity is carefully prepared for the reception of the filling. After a thorough drying out of the cavity a piece of soft charcoal, the size of a hemp seed, impregnated with oleum cassiæ, is laid in the pulp chamber, and pressed into the root-canals with a good sized plugger in such a manner that it comes to lie upon the pulp remains which are still sensitive; should the space permit, one can place a second piece of the charcoal in thus prepared. The oil of cassia which is expressed is then removed, together with any traces of blood which may be present, by means of cotton-wool, and the cavity is hermetically closed with cement, or plaster of Paris. Plaster of ordinary consistency is prepared and held in readiness upon a glass slab; of this a small quantity is laid upon the charcoal which is in the cavity. Should the plaster not adhere to the oily layer of charcoal, it is pressed tight by means of a dry plug of cotton-wool dipped in talc powder; it will then adhere to the tooth substance, and cover the charcoal. If the latter is insufficiently covered, a little more plaster is added, and condensed with cotton-wool. One must then wait for the plaster to harden before inserting the filling.

For the covering of the charcoal chloride of zinc cement is the most suitable of all the cements known to me. The phosphate cements, which in a plastic condition do not possess any affinity for water, are more difficult to use, and cannot well be fixed on the floor of the cavity. Nor can the chloride of zinc cement by itself be fixed with the aid of pluggers; on the other hand, it can be introduced with ease if the cement, mixed moderately soft, is pressed down with cotton wool plugs dipped in talc powder.

The sealing of the cavity with cement is certainly much more reliable than with plaster of Paris. After the hardening (the cement will harden under water), the crown cavity is carefully prepared for the introduction of the filling. All undercuts, etc., and also the cervical margin, are cleared of plaster, or, rather, of incompletely hardened cement, and every trace of superfluous material is removed. The cofferdam is then applied, the cavity dried, and filled in any way desired.

Of 243 teeth, which I have filled during the last two years by this method, I had to record in the early part of this time only four failures, which, however, are to be accounted for by insufficient cauterization and defective cleansing of the pulp cavity; yet even in these cases the pains (pulpitis) which supervened disappeared on the repeated application of arsenic. Periostitis did not, however, occur in a single case. I prefer, therefore, this method to any other, and have discarded definitely the filling of the roots after the cauterization of the pulp.

With pulpless teeth this method cannot be adopted; in the treatment of these teeth the antiseptic filling of the entire root-canal cannot perhaps be avoided.

Discoloration of the dentine is not to be feared by the employment of this method, if due care has been taken to cover the charcoal at the transparent dentine layers.—*Dominion Dental Journal.*

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# "SYPHILIS, WITH SPECIAL REFERENCE TO THE RELATIONS OF THE DENTAL PROFESSION TO THE DISEASE."

### BY HENRY A. PULSFORD, M. D.

Read before the Central Dental Association of Northern New Jersey, June 10, 1895.

There are very few busy dentists who do not unwittingly treat at least one syphilitic in the course of each year of practice. The disease is an extremely common one. In the practice of skin specialists about one-tenth of all the cases seen are forms of syphilis, and in order of frequency it stands third upon the list of skin diseases. As it is contracted by the rich and intelligent almost as often as by the poor and ignorant, you are always liable, no matter among what class you practice, to be called upon to treat some person who carries in his mouth the poison of the disease. If he happen to infect you, it means at the very least two years' abstinence from professional work, to say nothing of the social and domestic privations such as infection necessarily imposes. If, through you or your instruments, he infect one or more of your patients, it means great and possibly irreparable injury to you and to your practice. It should therefore be of the utmost interest to you as dentists to have accurate information about this disease.

Syphilis is a chronic infectious disease, produced by a specific poison which, in all probability, is a bacillus closely resembling that of tuberculosis. Inoculation with this virus causes a speedy saturation of the whole system with the disease, and, except for the transient local reaction at the site of the inoculation, the malady in its subsequent course shows all the characteristics of a general constitutional disease. Syphilis may be acquired in several different ways: The germs may be deposited upon an abrasion, wound, or other solution of continuity of skin or mucous membrane. In the case of a woman impregnated by a syphilitic, they may enter the system through the placental circulation. The child begotten by a syphilitic father is usually syphilitic, and a syphilitic mother generally bears a syphilitic infant. The germs of syphilis are present in the discharges from all the early eruptions and ulcerations, and in the blood, lymph, semen and ova of those passing through an active stage of the disease. Infection through the unbroken epidermis, either of the skin or mucous membrane, is impossible. "The venereal disease" *par excellence*, syphilis, is usually acquired during sexual intercourse. Liability to the disease is practically universal, the only known immunity being that conferred by the disease itself, which protects the individual against a second attack.

After the expiration of a more or less definite period of incubation, infection with syphilis is followed by the development, at the site of the inoculation, of the "initial lesion" of the disease. This is first seen usually as a hard, painless papule, which soon breaks down into a shallow ulcer, secreting a scanty discharge, and causing considerable induration of the surrounding tissues. Such are the typical characteristics of the dreaded "hard chancre." The formation of this apparently trifling ulcer is a sign that the whole system is already hopelessly infected, and no local treatment, however heroic, can prevent the further development of the disease. Coincident with the appearance of this ulcer occurs the enlargement of the neighboring lymphatic glands, and within a short time a similar condition of all the glands of the body, together with the establishment of certain moderate constitutional symptoms, furnishes abundant proof that the disease has indeed become general. The eruptive period of syphilis follows the appearance of the initial lesion in from three to twelve weeks. It is ushered in by moderate fever, headache, pains in the joints and bones, and much general malaise. These symptoms are immediately followed by the appearance of an eruption occurring usually simultaneously on the skin and mucous membrane. The first eruption is commonly very superficial, consisting of spots of localized hyperaemia, like those of measles. It soon fades away, to be followed in the course of a few weeks by a second eruption, generally of a papular form. This in turn disappears, giving place, in a longer or shorter time, to still another and severer form of eruption. Thus the disease goes on, gathering strength as it develops, until the climax of the eruptive period is reached in a general eruption of postules or boils, which may be so severe that smallpox, as its name implies, is trifling in comparison. In the course of the eruptive period, which often lasts two or three years, there also occur many other manifestations of the disease. The general health fails, there is anæmia and loss of flesh and strength, there are ulcerations of the various mucous membranes, the hair falls out, certain diseased conditions of the eyes and ears may develop, and the bones and joints may become affected. After the second or third year there is often a decided lull in this storm of symptoms. Sooner or later, however, the disease again makes it presence and power felt by newer and severer manifestations. These, the so-called *tertiary* or *late* lesions of syphilis, differ decidedly from those which occur in the eruptive stage. They are rarely general in distribution, being confined to a limited portion of the body; they are extremely chronic, each distinct attack lasting for months or years; they often spread slowly, in a serpiginous manner, from the point at which they start; they rarely secrete infectious discharges; they often cause extensive destruction of the tissue which, occurring in important organs, may occasion a fatal issue; they are more likely to attack deep-seated structures and vital organs than are the lesions of the eruptive period. Fortunately for the many persons who contract syphilis, it is no more necessary for them to experience all the possible lesions of the disease than it is for a guest at a fashionable hotel to partake of every delicacy on the bill of fare. The majority of syphilitics have, besides their chancre, two or three moderately severe eruptions, a partial loss of hair, several ulcerations in the mouth or throat, and one of the slight or moderately severe late lesions. When properly treated from the first, the disease usually runs a rapid and benign course, leaving its victim somewhat impaired in health, to be sure, but only exceptionally a physical wreck or chronic invalid.

The foregoing brief sketch will give you some idea of syphilis as it is seen by physicians. Dentists, in the practice of their profession, naturally see much less of the disease; but that they have occasional opportunities for observing many of its characteristic lesions there can be no question. *On the lips they may possibly see the initial lesion;* for, although of rare occurrence, *chancre of the lip* is the most common of all extragenital chancres. More rarely still they may meet *with a chancre of the tongue, of the tonsil*, or *of some part of the face.* The characteristics of all these lesions are similar in whatever locality they occur. *The ulcer may be as small as that of the ordinary chapped lip,* or it may be *as large as an inch in diameter.* The most constant characteristics of the syphilitic chancre *are the parchment like induration of the underlying tissues and the painless enlargement of the nearest lymphatic glands. In the eruptive period the dentist may see such of the eruptions as occur on the head and neck, the ulcerations and eruptions in the mouth and nose, and the diseases of the eyes. One of the most typical of the facial eruptions* is the so-called "*corona veneris,*" *a well marked semicircle of large papules crowning the forehead just below the line of the hair.* The presence of this eruption, with a decided *thinning of the hair* on the sides of the head, is pretty strong proof of syphilis. Another characteristic manifestation of syphilis which a dentist may see is the "*angina syphilitica,*" *or syphilitic sore throat. It is a vivid, raw, ham-colored hyperæmia of the pharynx, tonsils, and soft palate, which is limited by a definite margin, especially well marked just above the uvula and the free border of the soft palate. Portions of the inflamed areas may be coated with a grayish layer of dead epidermis, or even superficially ulcerated.* The most common locations for the oral ulcerations of this disease *are the angles of the lips and the tip and margins of the tongue.* Associated with these ulcerations, or occurring independently of them, may often be seen *red spots, generally cir-*

*cular in shape, having sharply-defined edges, and flecked with a grayish deposit of epidermis. All syphilitic lesions* of the mouth seem more apt to occur upon parts subject to continual irritation, such as that produced *by a cigar or pipe, by a plate for artificial teeth, or by the roughened edges of broken or carious teeth.* Clean and well kept mouths are less liable to these complications than are foul and neglected ones. The most common oral lesions of late syphilis *are perforations and destruction of the hard and soft palates. They are almost always accompanied by a very offensive nasal catarrh. Deep ulcerations of the tongue and tonsils may also occur in this stage.* It is always satisfactory to remember that the discharges from all these destructive ulcerations are usually quite harmless, and incapable of producing the disease in another person.*

Not the least of the dangers of syphilis are diagnostic difficulties which it offers even to the experienced physician. The most innocent-looking lesions sometimes prove to be syphilitic, and the most suspicious in appearance frequently turn out to be harmless. A dentist finding himself face to face with a syphilitic patient who needs dental treatment has two courses open to him: he may refuse to take the case, or he may accept and treat him just as he would anyone else. He may urge that he is justified in refusing to treat syphilitics simply because of the personal risk incurred. This is perfectly true, but the risk cannot be altogether avoided by refusing to treat known syphilitics, since, as a class, they need a great deal of dental treatment, and they generally contrive to get it, and where the dentist does not suspect the disease he is naturally more or less off his guard. That a dentist ought to refuse to treat syphilitics from fear of infecting other patients is a good pretext, but, the same as with the personal risk, it cannot be altogether avoided by refusing such cases. Besides, in these days of wide and growing knowledge of germs and germ diseases, when we all know that the mouth is a perfect hot-bed of bacteria, a dentist is surely not guiltless if he fails to take the simple precautions which will make it almost impossible for him to carry any germs whatsoever from the mouth of one patient to that of another. A dentist who always thoroughly cleanses his hands and sterilizes his instruments before working upon each patient runs very little danger of transmitting syphilis or any other infectious disease. Another argument against the treatment of syphilitics is the "social morality" argument. Some "good" people argue that, as syphilis is invariably contracted through gross immorality, it is the duty of every true Christian, whether he be dentist, doctor, or preacher, to prevent the wretched sufferer from obtaining the slightest comfort or relief under this visitation of a justly incensed Providence. Of course, this is all nonsense. A syphilitic is very rarely a more grossly wicked man than the majority of his fellows, and the innocent are often accidentally affected, while the licentious-lived ones escape. Even if we should all unite in refusing to treat these troubles, we should not only fail to advance the social standard of social morality, but would inflict untold suffering upon countless innocent persons. Every syphilitic is a centre of infection, and carries with him possibilities of infinite mischief to his fellows. Let the clergy do their part in preaching sexual purity to the people; but let us also do our part, which is the curing and exterminating of these diseases.

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*Unless the fingers or skin of the operator be wounded or abraded.

In the scientific treatment of syphilis the dentist may, if he will, play a very helpful part. If all things were done as they should be done, the first step in the treatment of a syphilitic would be to send him to a dentist to have his teeth and mouth put in as good a condition as possible. This can in most cases be done before there are any infectious lesions in the mouth. Then, when the physician comes to put his patient through the courses of mercurial treatment, which are so essential to a thorough cure, there will be little danger of the occurrence of salivation or stomatitis, which check treatment and make the remedy seem as bad as the disease. When the ulcerations attack the mucous membranes, there will be no severe lesions in the mouth from carious, jagged teeth. In short, if a syphilitic has a mouth filled with smooth, clean, healthy teeth, it is easy to cure him; but if his teeth are dirty, ragged and carious, his cure is always difficult, and sometimes impossible. If dentists as a class refuse to do their small but important part in the treatment of syphilis, they are working against those who are trying to exterminate this horrible disease. If they wish to help us who are doing our best to rid society of this scourge, they will put to one side all thought of personal risk, and, confident in their knowledge and skill, will cheerfully undertake and accomplish their share in the good work.

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## METHOD OF TREATING PULPLESS TEETH.

By Dr. H. C. Gilchrist, Nyack, N. Y.

Read before the Second District Society, at Newburgh, October, 1896.

My method of treating dead teeth has been very successful during fifteen years of practice. Where there is a great amount of inflammation and swelling, the suppurative stage approaching, I first open the pulp chamber to release the confined gases. I then cut a small disk from blotting paper, about three eighths of an inch in diameter, which I saturate with chloroform, and apply directly over the root of the diseased tooth, covering the same with a little larger disk of rubber dam to protect the lips or cheek from being blistered. Two or three of these applications will in a few moments produce a small blister and soften the gum tissue. I then paint the parts thoroughly with iodine and aconite, equal parts, and, giving some capsicum plasters to use over the affected part, I dismiss my patient until the following day. In the majority of cases when the patient returns I find that the abscess is discharging through the gum where I produced my blister with the chloroform disk, and that the inflammation has somewhat subsided. If not discharging, it is ready to be lanced. I then cleanse the canals with Donaldson broaches, wash out thoroughly with water, as hot as the patient can bear, following with bi-chloride of mercury (1-10,000). Then making a piston of a broach wrapped with cotton, I carefully force beechwood creosote through the canal until it appears upon the gum. If very obstinate cases I use chloride of zinc (ten grains to the ounce). I then place in the canals a dressing of cotton saturated with the following preparation: One-half ounce iodoform, creosote of sufficient quantity to make a thin paste, to which add half drachm of oil of cinnamon, which, while acting as a germicide, also disguises the odor of the iodoform. This combination has given me more satisfaction than any that I have ever used. It is very rare that it is necessary to make more than the second application to effect a cure.

If the tooth is in a quiescent state when I begin, I open the pulp chamber, and after thoroughly cleaning out the canals, wash with hot water and bi-chloride of mercury, then pack the canals with cotton saturated with spirits of camphor, leaving it in for twenty-four hours. When the patient returns I pursue the same treatment with my iodoform preparation as before mentioned.

When the tooth is ready for filling, I adjust the rubber dam, wash out the canals with alcohol and follow with chloroform, which I evaporate with hot air. If I have found it necessary to drill through the foramen, I fill the canals with gutta percha point dipped in chloro-percha, which I force in with a warm instrument; otherwise, I use my preparation of iodoform, mixed in a thin paste of phosphate of zinc, to which I add a few shreds of cotton, which can be readily forced up to the end of the root.

Once in a while I meet an obstinate case where some constitutional disturbance causes a great deal of trouble, but with perseverance it can usually be conquered. Recently, when there has been a great deal of pain, I have prescribed ammonol in ten grain doses, with satisfactory results. But I must confess that I have met a few cases where all the prescribed methods have failed. In these I extract the tooth, excise the end of the root, wash out the socket with bi-chloride of mercury, and after filling the canal with gutta percha, return the tooth to its former position, tying it fast to the adjoining teeth. The first tooth that I treated in this way was a superior central incisor. That was fifteen years ago and it is still in the mouth, doing good service. Since then I have treated a number in the same way with good success, they being limited to incisors, canines and bicuspids.—*Items of Interest*

## PREPARATION OF CAVITY MARGINS.

### Dr. E. B. Weeks, Litchfield, Minn.

The time was, but now we hope is passed forever, when there was no definite instruction given as to the lines on which a cavity margin should be formed or how much or how little the enamel walls should be cut away with reference to precluding future recurrence of decay.

Remove decay. Cut away frail walls. Bevel the margins. These were the few but elastic rules for the preparation of all cavities, and as ascertained from the writers in the journals, from speakers at our society meetings, and by observation of fillings coming under our notice, these rules meant very different things to different operators. A cavity cleansed of decay by one operator would not be considered thoroughly excavated by another.

One would leave enamel walls for retention of the filling, while another would know that the retention of such frail walls would be the ruin of any filling within a very short space of time.

Enamel margins were considered beveled by some, while others would go much further. But thanks to Dr. Black and others we have now a system of definite laws as to the preparation of cavity margins and enamel margins, how much the walls should be cut away, how much the enamel should be beveled.

It is necessary to the stability of a filling that these laws be both understood and carried out in every cut of the chisel. It is also my observation that these laws are not carried out in the every day practice of the rank and file of our profession. The first requirement is a knowledge of the minute anatomy of the teeth, and of the lines of cleavage of enamel. Then the first rule should be: Cut away all enamel margins not supported by sound dentin. The wish to keep a frail wall of enamel for a retaining wall must give way to the fact that it will not stand, therefore cut it away.

Second. If the line of the margin of the cavity brings you close to the line of demarcation between the lobes of the teeth, cut through to or beyond such line, for it will prove a source of weakness to your filling if you don't, because of the greater liability of the enamel to split along these lines.

Third. Cut away the margins of the cavity clear beyond the lines of contact on the teeth. Let nothing deter you from doing this, for if the line of union between the filling and the enamel is at or within the line of contact, recurrence of decay is almost certain.

Again, carry the cavity margins out to such a place on the surface of the tooth that the fillings may be smoothly polished and beautifully formed. Do not cut into a developmental groove and then stop short of the end of it.

Do not cut next to a groove or to another cavity and stop there, leaving a thin division of enamel between them, but cut it away.

Having formed the cavity margins on the lines indicated, it remains to bevel the enamel margins. The enamel should be shaved or planed down with sharp chisels to that line on which it splits or cleaves off most readily, then with enamel trimmers the margins of this enamel should be beveled beyond this line, so that the ends of the enamel rods may be protected by the filling. It is impossible in a paper like this to demonstrate just what this bevel should be at each particular part of the tooth or cavity. It must be learned from close observation of the lines on which the enamel cleaves at each different portion of the tooth, and by following the teachings of Dr. Black, whose writings and admirable illustrations are open to each one of us, a heritage of vast value to us all.

Dr. Ottolengui, in his book on "Methods of Filling Teeth," after rehearsing what has been accomplished in the past, says: "Something more will be required of the dentist of the future. He will be asked to abandon the assertion, 'Madam, your tooth has decayed around my filling, but the filling is all right.'" Undoubtedly there are teeth in which it is impossible to prevent recurrence of decay, but it is equally true that in too many times when "the teeth decay around the filling," the filling is not "all right."—*Dental Review.*

# SYSTEMIC MEDICATION FOR THE RELIEF OF SENSITIVE DENTINE.

Read before the Washington State Dental Society by Dr. B. W. Cassil, Dayton.

The tendency of the times seems to be toward the relief of acute pain in all operations for the relief of human ills. That this is as much true in the dental, as well as other branches of the medical profession is apparent to all.

For this purpose, local and other anæsthetics have been introduced and given careful attention by the profession with more or less satisfactory results, where conditions are severe enough to warrant their use.

There are conditions, however, occurring constantly in the experience of the dental practitioner where the use of the general anæsthetic is inadmissible. In fact, as yet, no local anæsthetic or treatment of any kind has been found which would give the desired results without some injury to the organs to which they are applied, and this is sensitive dentine.

Failing in these directions to produce the desired results, attention is of necessity directed to systemic medication for relief of one of the most potent reasons for the loss of dental organs, or their neglect until the pulp lesion compels attention.

Much has been done by general practitioners of medicine in this direction, in conjunction with the intelligent dentist in the way of prescribing tonics, nervines, or sedatives, as the case may be, to prepare patients for the ordeal which seems to be so much dreaded by our clientele, but none so far, have recommended a specific which will act promptly, and come as near producing uniform results as salicylate of soda.

Attention was first directed to the drug for use in dental practice by an article in one of the dental journals, on systemic treatment of pyorrhea. Little attention was given the subject at the time, however. A few days later a lady called to have her teeth examined, on attempting to examine a cavity on the cervical margin of a bicuspid, the dentine was found to be so excessively sensitive that she could not bear the slightest touch of an ordinary search point. An appointment was made with her for the following week, at which time, after applying the dam, various local anæsthetics previously found to be more or less efficient were tried without avail in this case. Here seemed to be a case which was absolutely beyond relief, except with the forceps, the cavity being a very small one, and the set of teeth unbroken, this was not to be thought of. While considering the case, the article on Salicylate of Soda came to mind. I began to diagnose the case from a systemic standpoint. It occurred to me as very strange that the dentine in this case should be so much more sensitive than ordinarily, unless there could be some good cause assigned for it, especially as the decay was so slight.

The writer of the article before referred to claimed that there was doubtless a systemic cause for pyorrhea which was closely allied to inflammatory rheumatism, and was produced by uric acid in the circulation.

The idea suggested to me was, that as the dentine is of similar structure to that of the bones, why should not rheumatic conditions effect the dentine as well, and be responsible for much of the soreness, therefore I asked my patient if she was subject to rheumatism, and the reply was: " Yes, sir, more or less all the time."

Having had a good deal of experience with Salicylate of Soda in treatment of rheumatism in hospital practice in the east, and as it was nearly invariably successful, I determined to try it in this case for relief of sensitive dentine. A prescription containing four drachms Salicylate of Soda, to be taken in 15 gr. doses, four times per day, was given her, and she was dismissed. Four days later she returned, burs could be run at a good speed with no complaint of pain. You can rest assured that my patient was more than pleased, although she complained that the medicine was rather unpleasant to take, and produced a slight nausea at times.

Such flattering success in this case determined me to continue the use of the drug whenever an operation sufficiently painful to warrant it was found.

Meeting a young girl on the street a few days after the first trial, for whom about a year previous I had been compelled to place cement fillings in the upper incisors, with very slight excavating, due to sensitive dentine, suggested her as another good subject to prove the qualifications of Salicylate of Soda, for a place in our list of remedies. She called at request, and on examination the dentine was found to be as sensitive as before. The same prescription was given her, with the injunction to report at once if she noticed ringing in the ears. She returned the next morning and remarked, " That stuff of yours has set a whole nest of bees going in my head," whereupon the dose was reduced to 10 grs. three times a day, and finally to 10 grs. twice per day, when ringing ceased. After the fifth day the patient was placed in the chair, and the cavities excavated easily, the only complaint of pain being at one or two points near pulp, and that but slight. Complaint being again made of nausea, I desired to make a combination that would give results and still have no objectionable features, if possible. Knowing Salicylate of Soda to be soluble in water, aqua peppermint was first tried, not only from the fact of its so perfectly disguising the taste of most drugs, but also for its efficiency in relief of nausea. This mixture did not quite suit me, so syrup of ginger was added to improve the flavor, as well as for its stimulating qualities.

The formula with which the best results are obtained is Salicylate of Soda 4 drachms, Aqua Peppermint 1 oz., Syrup of Ginger 1 oz., given in teaspoonful doses, this gives us 15 gr. dose S. of S. Since using this formula there has been no complaint of unpleasant effects of any kind.

No set formula can be given for all cases, however, one case having been met where 20 gr. four times a day for a week were used, and it may be necessary to prescribe as much as 24 grs. per dose before getting the desired results.

This treatment is also effective for relief of facial neuralgia with almost universal success on the theory that neuralgia is due to rheumatic influences.

From my experience already with this drug I am satisfied that a remedy has been introduced that will prove invaluable in our practice, permitting a great many cases to be handled in a manner satisfactory to ourselves and our patients, which heretofore we have been obliged to patch up in a merely temporary way, to allow the patient to carry the teeth a little longer. Each of us will have to be guided by his own judgment and the conditions of the case, and satisfactory results will be assured.—*Pacific Dental Journal.*

## PRACTICAL PLACE.

### The Kind of Patients Wanted for Students.

Wanted, at the dental infirmaries, patients who are really objects of charity, and not those with bank accounts. Supervisors of infirmaries have striven to secure for patients worthy people who are really in want of dental services and are wholly unable to pay for the same. It seems impossible to reach this class, and any reader who will formulate a plan to do this will assist in the cause of dental education. Write your opinion to the *Western Dental Journal*, and it will be published " with thanks."

## Where to Place the Devitalizing Agent.

In pulp exposure, place the devitalizing medicine in the dentine away from the point of exposure. You will thus secure devitalization with little pain, and very often more rapidly than if placed directly upon the exposed pulp. If the caries which exposes the pulp is upon the distal portion of a molar, then make a new cavity upon some mesial aspect of the tooth, and into that place the devitalizing medicine. This new cavity afterward gives the direct entrance to anterior roots, which is usually necessary for a perfect operation.—*Western Dental Journal.*

## How Far Beneath the Gingiva Should a Band be Extended?

No matter what the age of the patient, or degree of recession of the investing tissues may be, extend the band beneath the gingiva sufficiently only to subserve the purpose of a band. Extend it an equal distance, at all points, beneath the edge of the gingiva, and a safe distance from the line of attachment of the peridental membrane.

Give nature a chance, where conditions are favorable, to reattach the membrane. Give her a chance to replace the gingiva, in its normal position.

The great fault lies in extending the band too far beneath the gum line; believing ample extension necessary to prevent ultimate exposure; losing sight of the fact that in so doing you are encroaching upon, and even detaching the peridental membrane.

The farther it is extended, the greater will be the difficulties encountered; the soft tissues will be lacerated, materially impaired, the tooth improperly shaped, and a poor fitting band the immediate result. However perfect nature may, in a few weeks, conceal this fallacious condition, the very perversion you have endeavored to prevent, will be the least that may follow, inflammation, recession and decay.

To obtain the best results, the gingiva should be temporarily dilated and receded before preparing the tooth to receive a band, and before setting a crown. This can be readily accomplished by twisting absorbent cotton on a waxed ligature, and tying it around the tooth against the gingiva the day before operating. The gingival border of the band should not only be in the proper relation to the line of attachment of the membrane, but it should also be dressed to a thin edge, and fit snugly to the tooth on all sides. When the surface of the tooth to receive a band cannot be made convex in a line parallel to the border of the gingiva, the band should be burnished to fit this concavity. But if the concavity is in the form of a deep fissure, it should be filled with gold or amalgam—R. J. WENKER, *Dental Review.*

### INTERESTING EXPERIENCE.

I noticed in a recent number of this journal an experience of a peculiar nature in connection with an aluminum crown set with amalgam. The circumstances there described so nearly accorded with an experience of my own that I feel encouraged to report mine also. Having been requested by a lady patient to do something to save the root of a lower right second bicuspid from the necessity of extraction, and as quickly and cheaply as possible, I thought of making a crown of a piece of aluminum tubing about the diameter of the root, trimmed and fitted to it and filled, and cusps built on with amalgam. This I did in a short time, and sent the patient away much pleased with my efforts to replace her lost grinder. You may imagine my surprise when the lady returned next morning with a few scraps of something that looked like acid-eaten iron, about the shape of the piece of tubing used to form the crown, but ready to crumble to pieces in her hand. She said a few minutes after she left the office she felt it getting hot, and a boiling sensation about the gum, and then the filling seemed to boil and crumble away out of the crown. I concluded that some chemical action took place on the union of amalgam and aluminum in the saliva around them, but do not yet think I clearly understand the reason for the occurrence. I set to work again, and with tubing, hammer and anvil soon fitted another band to the root, but this time filled it with oxy-phosphat, and find it giving good service and no apparent inclination to give way at any point. Can any one give a satisfactory explanation of the destructive agency in the first case? If so, I, for one, will be pleased to consider it, and thank him for his trouble.—By A. ROSE, L.D.S., Peterborough, Ont., in *Dominion Dental Journal, October, 1896.*

### FILLING WITH A MATRIX.

By the use of Dr. Jack's and other matrices, very many of the difficult operations in contour filling have become, under the skillful hand, very skillful operations; and operations once requiring hours for their completion are now accomplished in minutes.

The impossibility of having the walls of a cavity in full view, and the inconvenience of easily adjusting a matrix, led me to discard all forms of matrices, and look about for a method of quickly reaching the same or a better result. After some years of experimenting with methods, foils and preparations of cavities, I am pleased to present you a method which you will find to answer the requirements of the case, thereby making operations, formerly long and difficult, so short that they become a pleasure both to the patient and the operator.

First, space by a separator or tape, to the width of a No. 3 or 4 separating file. Apply the dam in the usual or following manner: In the case of a right upper, second bicuspid, lay the dam over the face and apply it to the mouth in the position it is to occupy; then, with a pencil, mark the center of each tooth from the right superior lateral to and over the first molar. Punch out a hole for each tooth, and then apply the dam, beginning at the lateral and working backward. Over the molar slip a clamp, or, if close to the second molar, slip a ligature up between, and leave it. Then, with a thin and flat burnisher, turn the dam up on itself around each tooth, and dry with cotton.

The dam applied in this manner obviates the tying of a ligature about each tooth, which is a nerve-trying experience.

This method allows greater freedom for working, because the dam is out of the way, and also affords better light. It will be found to answer the purpose for large cervical cavities when properly applied.

Next, prepare the cavity as usual, except do not cut any retaining points, but in their place cut a fine groove across the cervical wall and down the buccal and palatal or lingual walls with a fine bur, and make the opening on the crown surface, when possible, slightly dovetailing toward the body of the tooth; then, with a sand-paper disk, smooth the mesial surface, as the case may be.

The gold to be used becomes the next feature, and must be a soft gold, easily molded under a burnisher.

In using soft foil, take No. 4 soft, cut in one half sheets, and roll to about the size of three-sixteenths of an inch in diameter, and flatten. Each cylinder to be of a length slightly exceeding the depth of the cavity from front to back, and its size in the square to depend on the width of the cavity and the method of condensation.

In preparing the cylinders, take a strip full length of soft gold, grasp it with a pair of pliers, and fold over and over till the size wanted is rolled; then condense easily endways, then sideways, and repeat till it is of the desired square.

Never cut a strip in two lengthways to get a short cylinder, but rather fold it on itself lengthways, and proceed to roll as in the usual manner. With many of these cylinders of various sizes rolled during leisure hours, or by the assistant, considerable time may be saved at a moment of the greatest strain to yourself and patient.

Now place a floor of these squared cylinders across the bottom of the cavity, allowing the ends to extend slightly over the edge, and, with a large, round or foot-shaped plugger partially condense this layer, then, with a couple of pieces of No. 4 foil, made cohesive and *single thickness* placed over the partially condensed surface, the whole is thoroughly condensed with a smaller, rounder plug, care being taken not to allow the plugger to enter the gold extending over the edge.

When thoroughly condensed, pass a thin, flat burnisher up by the ends, and, with a slight pressure, force them over the edges of the cavity in each direction, making the burnishing carry the gold over the edges, thereby locking it and preventing tearing it out. Increase the pressure on the burnisher till the ends are well condensed, and shaped to the desired contour.

When this point is reached, place two thin layers of cohesive gold over the whole, and condense well. This is done for the purpose of locking each layer and giving edge-strength to the contour. Burnish this edge well, and then proceed with your second layer of soft cylinders, as you have done with your first, with the exception that the middle cylinders are to be slightly longer than the side ones to allow for the swell of the contour. Burnish, and proceed as before.

The crown surface can be finished by building up the desired shape with cohesive gold, which can always be made to unite with the soft gold, if the first union is made with pieces of single thickness, well united by mechanical force, and condensed with soft gold.

Contour fillings, built in this manner, do not need any finishing with a file or sand-paper, as the whole surface is left finished at each stage, and any amount of overlapping gold is burnished off, leaving a clean, smooth edge, and highly polished.

By this method the entire wall edge is constantly in view, and one point is not left for another till the former has been completely filled and finished, which alone is enough to commend this method to our careful consideration.—WAITT, *International Dental Journal.*

## TREATMENT OF ALVEOLAR ABSCESS.

The following was presented at the Vermont State Society and published in the *Dominion Dental Journal.* "Regarding the treatment of alveolar abscess Dr. G. Lenox Curtis said he could best serve the dentists by giving them a practical demonstration. He soon found a willing patient among those present.

Allow me first to show you how to find the affected tooth. With this heavy steel instrument (one the size of an ordinary plugger) percuss the teeth as you now observe me doing. Get the resonant tone as you find in the healthy teeth, and continue around the arch until an abnormal sound is detected. When the diseased organ is reached, as is here clearly demonstrated, the tone is dull, and as I have named it, leaden, as if the instrument came in contact with a yielding substance. You will get a similar tone to this in cases of pericemental inflammation. While the enamel is usually discolored in these cases, this and the list of hot and cold applications to the tooth is not always reliable in ascertaining its vitality.

Here we find the pulp of the left central incisor devitalized, and the tooth abscessed; the fistulous opening of the gum directly over the lateral incisor. This is not an uncommon occurrence, for we frequently find the fistulous opening far away from the source of trouble. In such cases I advise the alvatatomy to take place directly over the apex of the root. The fistula will usually cure and heal of itself after it has been thoroughly cleansed and carbolic acid forced through it, or even the burr of curette. First, I will open into the pulp chamber from the palatal surface, making the opening large enough to allow free access to the canal, which as you see I ream out with the Gates Glidden drills, of various sizes, until I am positive of having reached the apex.

Thoroughly cleaning and sterilizing the canal and drying it with the Darby points, which are the best and most satisfactory for perfectly drying the canal, again sterilizing it by the hot air blast until as you see the patient is in pain from the intense heat it causes, we have the dentine dry, and it will receive the chloroform like a blotting paper which, by its capillary attraction, draws the fluid to the apex and into the open canaliculi. The chloroform is best introduced into the canal by means of a hypodermic syringe. The gutta-percha canal points I now place into the canal, and the chloroform immediately attacks them and forms a chloro-percha, which I believe forms a more perfect canal-filling than any other material. The canal is now packed solidly with gutta-percha, and at some future time, the cavity covered with gold.

I will now open through the gum and alveolar process to apex of root with this spear-pointed drill, first, as you see, injecting cocain into the gum through which I am to operate. I now, with this rose-head bur, pass it beyond the apex into a cavity in the alveolar process made by the abscess, which is as large as an ordinary bean, bur away the sac and freshen the edges of the bone, and with this curette scrape out the debris and follow this by thoroughly syringing the cavity with peroxid of hydrogen, hoping to boil out all remaining fragments. Now, to render the part in as normal a condition as possible, I force into cavity a hot 1 per cent. solution of chlorid of sodium. The after-treatment consists of keeping the face frequently in ice-water to prevent the accumulation of pus and the face swelling. Should any purulent discharge come from the wound within the following day or two, it should be syringed out within the cavity as before, and inject two or three drops of pure tincture of iodin into cavity and leave there. This repeated, if necessary, every two or three days should be sufficient to effect a cure. Over-treatment in these cases is too often cause of failure."

## A Powerful Hemostatic.

Since last year I have been using a mixture of antipyrin and salol for checking all kinds of hemorrhage in dental surgery. At present I rely upon this remedy with much confidence. It seems to me that the said mixture possesses a styptic power superior to any one of the substances generally used for that purpose.

To prepare the mixture, I put into a test-tube equal parts of antipyrin and salol. Then fuse the contents of the tube over a spirit lamp until the clear liquid immediately resulting after the application of heat has turned to a hazel color. If prepared in this way the mixture will remain longer in a liquid state. Antipyrin alone is a powerful hemostatic, but becomes solid so quickly after you lift it up in a pellet of cotton that it cannot practically be used in dentistry.

During the last few months I have had occasion to appreciate the value of antipyrin and salol in artificial crown and bridge work. Contrary to all other astringents, the mixture of these substances rather dissolves than coagulates the blood, but checks the flow. Applied to the wounded gum, it leaves a clean, dry, raw surface.

I have not found anything better for hemorrhage after extraction. —A. E. Mascort, *Dental Cosmos.*

## Thermometers.

" Before purchasing a thermometer invert the instrument ; the mercury should fall to the end in a solid 'stick.' If it separates into several small columns, the tube contains air and will not register accurately. Nine persons out of ten think the mercurial column is round; but this is not the case; it is flat, and the opening in the tube is as small as the finest thread."—*Dental Practitioner and Advertiser.*

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## A Standard of Morality.

BY DR. H. E. BEACH, CLARKSVILLE, TENN.

Every dentist who has been through a dental college knows that almost every class is afflicted with a class thief or thieves; that it is not safe to have anything worth having lying around where it can be appropriated. If a man will steal instruments and materials from his classmates, he will steal money or anything else; what may not be expected in his dealings with his patients and the public? He may be educated to the highest conceivable standard, but he will be dishonest still. The dental colleges have responded readily and with hearty co-operation to every demand made upon them by the profession, and if it be required that no student be graduated who is known to so forget the moral law as to disregard the rights of others, there would be less violation of the Code of ethics after the present "crop" has died out. Let the institutions, if necessary, employ keen, shrewd class detectives, and weed out the good from the bad before they are licensed to practice their evil desires upon a trusting public. Let the colleges give to the profession none that are not trustworthy. Then, and not till then, will a new era begin to dawn. —*Ohio Dental Journal.*

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## Pay for Your Work.

The practice of dentistry is the work of your life. It is as honest, useful and legitimate a branch of human industry as any other on the face of the globe, and no one earns his wants of living more fairly, and both common sense and bodily necessity require that you should try to provide properly for yourself and for those dependent upon your labors for support. This you cannot do unless you have a business system, for upon system depends your professional and financial success.

If people do not pay, you cannot live by your calling, and you will very soon tire of all work and no pay. If you render bills promptly it teaches people to look for them and to prepare to pay them just as promptly as they do other family expenses. It is often more advisable even to submit to a reduction in a bill for prompt payment, than to let the amount stand over and run the risk of losing it through the pay-when-you-please system, for while you are waiting someone may fail and others abscond. You should render your bills while they are small and your services are still vividly remembered.

When patients ask you how much their bills are, always reply with courteous promptness and decision, " one dollar," or " ten," or whatever the amount may be, large or small; and if you are careful to avoid prefacing this reply with other words, most people, in the embarrassment of the moment, will proceed to pay you without objection, where if you add more words it will weaken your claim in their minds, or impress them with the belief that you have no settled charge and will furnish them with a pretext to show surprise and contend for reduction. When one does demur at the moment, show your amazement and prepare at once to defend or explain the justice of the charge.

Patients will often ask: " Doctor, when shall I pay you?" or "Shall I pay you now?" A good plan is to answer promptly, " Well, I take money whenever I can get it;" " Short payments make long friends;" " Prompt pay is double pay;" or something to that effect. Never give such answers as " Oh, any time will do," or, " It makes no difference when," or you will soon find it to be very expensive modesty. —CLYDE PAYNE, *Odontographic Journal*.

### CLEANSING PASTE FOR THE HANDS.

To half pound pulverized borax, add one pound carbonate of soda and a half pound fine pumice, with sufficient glycerine to form a paste. Use in place of soap to cleanse and whiten the hands.—A. C. HEWITT, *Southern Dental*.

### TO MAKE A PERFECT CAST.

Marble dust and glycerin—about 4 ozs. glycerin to a quart of marble dust—makes a beautiful cast. I have been using it for a long time and like it better than anything else I have ever tried; in fact, can find no fault with it.—CHAS. P. GROUT.

### TOOTH WASHES.

If a wash is desired which is to act primarily as a cleansing agent, a solution of soap is to be recommended. It may be made after the following formula:

| | |
|---|---|
| Castile soap | 1 oz. |
| Alcohol | 6 ozs. |
| Glycerin | 4 ozs. |
| Hot water | 6 ozs. |
| Oil of peppermint | 15 mins. |
| Oil of wintergreen | 20 mins. |
| Oil of cloves | 5 mins. |
| Extract of vanilla | ½ oz. |

Dissolve the soap in the hot water and add the glycerin and extract of vanilla. Dissolve the oils in the alcohol, mix the solutions and after 24 hours filter through paper. It may be colored, if desired, with cochineal.

If the "wash" is intended simply as an elixir for sweetening the breath, the following preparation, resembling the celebrated eau de botot, will be found very desirable:

| | |
|---|---|
| Oil of peppermint | 30 mins. |
| Oil of spearmint | 15 mins. |
| Oil of cloves | 5 mins. |
| Oil of cedar wood | 60 mins. |
| Tincture of myrrh | 1 oz. |
| Alcohol | 1 pt. |
| Cochineal coloring sufficient. | |

Care must be taken not to confound the oil of cedar tops with the oil of the wood. The former has an odor like turpentine; the latter has the fragrance of the cedar wood.

When liquid tooth washes are used in the toilet they should be supplemented occasionally with a powder, soap or paste, as liquids alone will not keep the teeth white and clean. Formúlas for such preparations may be found in great profusion in previous numbers of the "Circular."—F. C., Washington.

### To Refit Rubber Dentures.

Scrape or file the palatal surface of the old plate; use mixture of thin plaster and replace the plate in the mouth; close teeth tightly together with plate in place; varnish the impression as usual; flask, and pour the impression; separate the flask; remove thin coat of plaster, then roughen the plate and pack enough rubber to fill the space.

THE

# Dental Office and Laboratory.

FOURTH SERIES.

Vol. XI. PHILADELPHIA, MAY, 1897. No. 3

[FIFTH PAPER]

## THE CONSTRUCTION OF ARTIFICIAL TEETH.

By Theodore F. Chupein, D. D. S., Philadelphia, Pa.

### PACKING.

The wax having been saved is formed, while soft, into a ball and placed into the rubber gauge. There are several of these on the market, but the one we constructed ourself, and which any dentist can make, is represented by Fig. 15. It consists merely of a glass test tube, A, about $\frac{3}{4}$ of an inch diameter and about five or six inches long, which may be purchased of any druggist for five cents. A ring of brass plate, B, is fitted around its throat, having an extension from it, C. At the bottom a tube of brass plate, D, is fitted, which is soft soldered to a plate, E. Into this plate a wire standard, G, is screwed, which passes upward through the extension, C, and secured by a small nut, H. A pointer, J, is soldered to a small tube, K, which slides on the standard, G, and is held at any desired point by the small thumb screw, L. The whole is screwed to a wooden base, M, with screws through the plate E. On placing water in the glass tube and putting the wax into it, the water rises. The pointer is secured at the height indicated by the water. On removing the wax, the water falls to the point indicated by the dotted lines

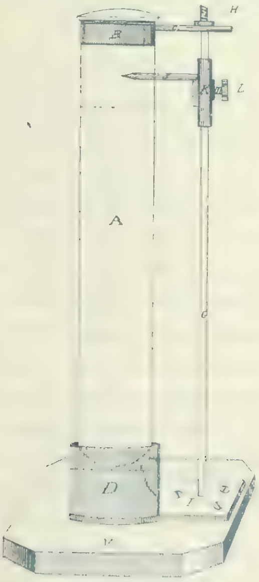

Fig. 15.

Rubber is put into the water until it rises again to the point indicated by the pointer. There is nothing new in this devise other than the tube being small shows a larger displacement of water when the wax is withdrawn, and consequently giving greater accuracy as to the quantity of rubber required.

The rubber is withdrawn and cut into small pieces and placed on a slab of soap stone. This is warmed over a Bunsen burner, which softens the rubber when it is packed into the flask. It is better to have the pieces of rubber cut small than cut in large pieces, as the flask can be more accurately filled.

The face of the cast should be covered with some intervening substance in order to prevent the rubber from adhering to the cast, thereby giving considerable trouble, when the case is vulcanized, to clean it from the plate. Collodion and liquid silex have been proposed for this purpose, but we favor tin foil more than either. Tin foil No. 4 or 6 may be neatly pressed all over the face of the cast by means of a ball of cotton. When the case is vulcanized it is readily removed by immersing the plate for a few minutes in a solution of nitric acid and water, one-fourth acid to three-fourths water, after which it is washed in water, when the surface covered by the tin foil will be clean and smooth.

Still another plan has been proposed, which we have tried and found effective, and in some cases superior to the application of tin foil, and this is to coat the surface of the model with metal. This is accomplished as follows: A quarter of an ounce of collodion is put into a two-ounce bottle with a large mouth. To this is added three quarters of an ounce of ether and a quarter of an ounce of "silver gloss." Silver gloss is a preparation of tin and zinc. It is an impalpable powder, and though termed silver gloss contains no silver, and resembles that metal only in color and luster. The material partially mixes with the collodion and ether when it is agitated, and when thus agitated it is applied to the face of the plaster cast by means of a camel hair pencil. It forms an infinitesimal film on the surface to which it is applied, and adheres to it firmly, so that boiling does not remove it, and it effectually prevents the rubber from adhering to any surface to which it is applied. It may be applied to the "reverse" of the investment as well as the plaster cast, whereby the case can be removed from the flask comparatively clean from plaster. Messrs. Johnson & Lund have this material prepared ready for use under the name of "Silverine." It is advisable to clean off the camel hair pencil after each use, as also to keep the bottle well corked to prevent the evaporation of the ether.

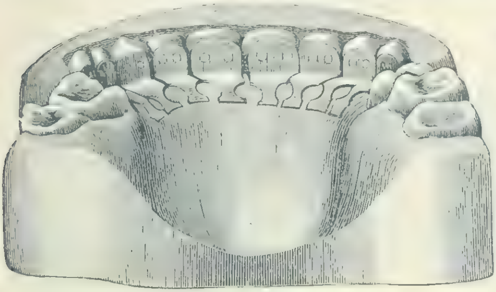

Fig. 11.

In cases such as are exemplified by Fig. 11. this process is better than the application of tin foil to the cast.

There are some dentists who do not care to go to the trouble of gauging the quantity of rubber, but generally guess at the amount necessary. We have never favored guess work of any kind, but should the flask be filled with rubber in this way, the parts of the flask should be separated so as to ascertain if there be an excess or a deficiency of rubber. This may be accomplished as follows: The linen or muslin which is placed between the sheets of rubber being removed, is cut somewhat in the shape of the flask. It is then washed so as to remove the starch or glaze which is on it, and a lather of soap applied to both sides of the muslin. In this condition it is laid over the rubber, the parts of the flask put together, the bolts loosely put in place and the flask and contents boiled for about ten minutes. This so softens the rubber that the nuts may be screwed down until the parts of the flask come close together. The parts of the flask may now be separated and the muslin removed. If *too much* rubber has been put in the flask, it will be found to have oozed into the gates which were cut in the investment to permit the escape of this excess. This excess may be cut from the gates with a pair of scissors. If *too little* rubber has been used this will show itself in the flask when the muslin is removed, when more rubber may be added at the points where the deficiency exists. The parts of the flask are then again put together, the case again boiled for ten minutes, and screwed together by the nuts of the bolts until the parts of the flask are brought in close apposition. Proceeding in this way there will not be danger of fracturing the gum blocks. We should state that in screwing down of the flask by the interposition of the muslin, this should be done *before* the tin foil is placed over the face of the cast.

To avoid the trouble of applying the bolts to the flask and of removing them when the flask has been boiled, we have found the device of Dr. M. Lukens Long, Fig. 16, most excellent, as with it the rubber in the flask is thoroughly softened, and the parts of the flask may be brought together, within the pot, while the water is boiling, without soiling the hands. If one of these be not at hand the ordinary flask press will answer the same purpose.

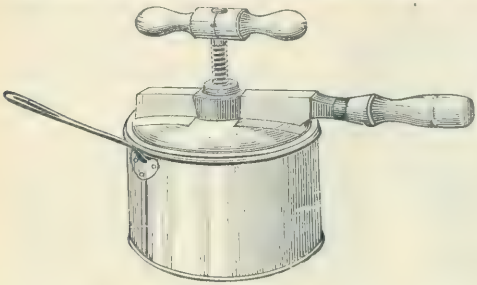
Fig. 16.

Should plain teeth be employed in the case, and pink rubber used to represent the gum (which is by far the most artistic and natural way of constructing a denture), it is best to paint the model with rubber solution and pack the pink rubber which is to represent the gum *first*, when the case may be invested, as is represented by Fig. 16A. But if the gum be first formed in wax, and the case invested as shown by Fig. 16B, the mode of packing such a case with pink rubber will be as follows: The pink rubber is cut up in little square and little triangular pieces, about $\frac{1}{8}$ of an inch square, and the triangular pieces proportionately large. Other pieces may be cut 3-16 of an inch wide and about $\frac{1}{2}$ an inch long. The case should be invested so that the investment be *at the very edge of the wax gum. Gates should be cut at the back part of the flask. No gates whatever should be cut in the front of the flask.* The pink rubber is placed on a slab of soap stone which has been warmed. This softens the rubber. A triangular piece is placed between the 1st and 2d molars; this is held in place by one instrument, while with another, made quite thin, like Fig. 17, it is gently packed between the teeth. Another piece is added between the 1st molar and 2d bicuspid, and manipulated in the same way until the whole case is thoroughly packed, filling up every little space, so as to prevent the red rubber of the plate from cropping through. This should be done with the greatest care, as the red rubber, being the softer of the two, will be forced into the minutest space when the flask is closed.

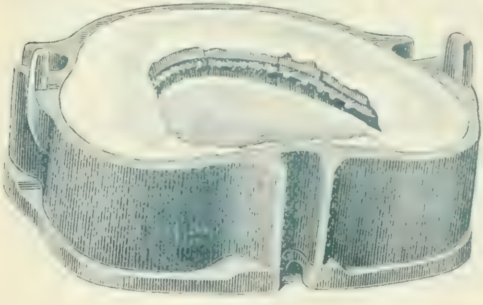
Fig 16 A.

Fig. 17.

If the precaution be taken, however, of cutting gates for the escape of the rubber *at the back of the flask, and no gates cut in front,* this cropping through of the red rubber on the pink rubber gums is not likely to happen. The most certain way, however, is to pack the pink rubber gums first, and invest as is shown by Fig. 16 A. When this is done, the pink rubber which was used to form the gum, will be seen from behind, in the flask, when the wax plate has been removed or scalded away with boiling water. Before using the red or black rubber which forms the plate, it is best to pack a little more pink rubber beneath the pins, so that it will unite with what had been used in front. When this has been added until it is clearly in view, but not encroaching on the pins, the rubber for the plate is then packed in the flask.

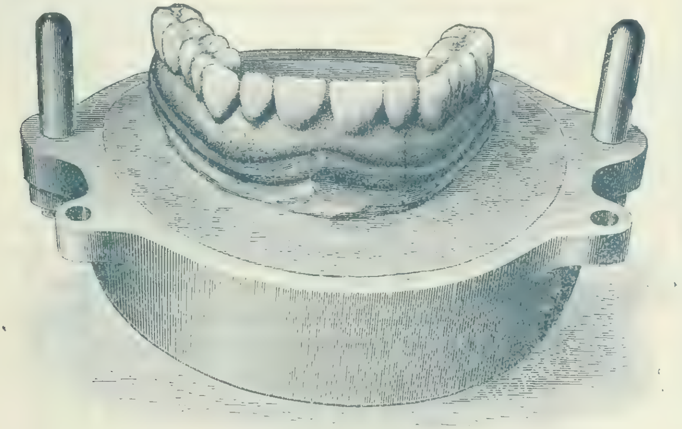

Fig. 16 B.

## VULCANIZING.

The best way to vulcanize is *at a lower temperature for a longer time.* Thirty years ago the instruction on this point was to keep the temperature at 280 degrees, for one hour and thirty minutes; but in this rushing age 320 degrees for an hour is considered the right thing. Men may succeed in vulcanizing at this temperature, but we are inclined to believe that the result is more frequently porus plates than plates thoroughly solid or thoroughly cooked throughout. The vulcanizing of rubber is somewhat like the cooking of bread. If the oven is too hot the dough is seized on the outside and a crust is formed, while the dough remains pasty within. In like manner, if a high temperature is maintained the vulcanite hardens like a crust on the outside, while within the rubber forms innumerable holes, making the interior of the plate porus or spongy. Our mode of procedure is to vulcanize as far as possible in steam. For this purpose we put about a half tumbler full of water in the pot, and place the flask on a stand within the pot, so that it will not be in the water at all, but when the water boils it will be surrounded by steam. The vulcanizer being closed, the heat is applied and the mercury permitted to rise until it marks 260 degrees. The heat is then turned off to a certain point, but the mercury continues to rise until it reaches 280 or 300 degrees, at which point it is kept, without permitting it to register a greater heat, for one hour and thirty minutes. A plate vulcanized at this temperature will be thoroughly cooked throughout. It will not be porus but solid, strong and elastic, and in finishing it the scraper will turn off finely defined curly shavings.

The blow-off to the vulcanizer may now be opened, and the vulcanizer unscrewed and the flask taken out and cooled thoroughly before cutting the work from the investment. Should the work not be hurried or the vulcanizer not be provided with a "blow off," we prefer to let it cool down until the mercury in the thermometer indicates 200 degrees, or less, before opening the vulcanizer. Indeed, when it can be done, we prefer to let the vulcanizer cool down thoroughly without making use of the "blow-off," as the odor is anything but pleasant. This blowing off causes a very disagreeable odor in the laboratory, but if one end of a piece of rubber tubing be placed over the mouth of the "blow-off" and the other end into a bucket of water, and the "blow-off" be opened gently, no disagreeable odor will be perceived. In lieu of this the vulcanizer may be put in the open air and the "blow-off" opened there.

## FINISHING.

The investment having been carefully cut from the work, and this thoroughly scrubbed, and all the adhering plaster removed, the work is filed up roughly into shape with the rubber file. The instrument shown by Fig. 18 is used to trim away the rubber around the necks of the teeth and the festoons.

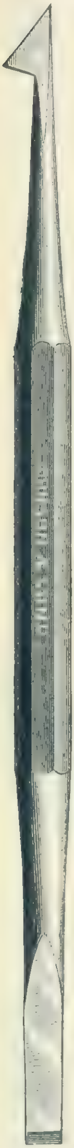

FIG. 18.

This instrument is easily kept sharp and does this part of the work expeditiously and neatly with its knife end, while the chisel end is used for trimming the rubber from the palatal part of the plate. The plate is still farther dressed into shape by means of scrapers, those designed by Dr. Kingsley being in our opinion best adapted for the purpose, as they are easily kept sharp, which is the first advantage of a scraper. We do not approve of the lathe burs, Fig. 20, for cutting down the palatal part of the plate, because the scraper does this part of the work better. Besides this, when revolved in the lathe, should it strike the teeth it is liable to fracture the block, or chip off a part of the tooth, or if not this it is soon rendered dull by contact against the hard porcelain. If a finisher is preferred for this part of the work, the one represented by Fig. 21 serves a better purpose, as with it neither of the above accidents is likely to happen. These finishers are made of hard wood with the shank fitted to the socket of most polishing lathes on the market. The working end is dipped in melted glue, and while the glue is hot it is sprinkled with emery or corundum powder. When the glue becomes hard they are used as above described.

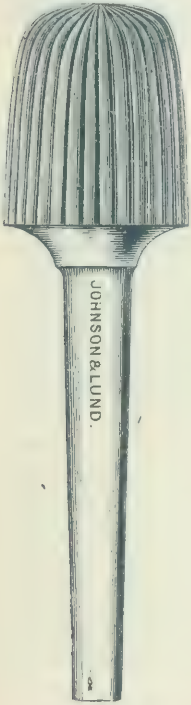
JOHNSON & LUND.

FIG. 20.

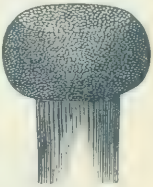

FIG. 21.

After the plate has been dressed into shape by means of the file scraper, lathe bur, or finisher, the surface left by these tools is gone over with sand-paper. The next operation consists of removing the tin foil which had been applied to the face of the cast, but which now adheres to the plate. This is done by immersing the plate in a solution of nitric acid and water, one fourth acid to three-fourths water, and permitting it to remain in the solution for ten or fifteen minutes. Should the case have the teeth backed with German silver, as shown by Fig. 11, or have clasps of this metal, it is preferable to remove the tin foil by dipping a soft stick in the solution and applying this to the plate, when by rubbing the tin foil is easily dissolved and removed.

The final operation consists in removing the scratches left by the sand-paper by means of wheels used on the polishing lathe. Of these, leather, cotton duck, felt and cork wheels have been recommended.

Of all, we prefer the cork wheel, both because it imparts a better surface and because it is cheaper. The corks from champagne bottles are generally of the finest quality. A hole may be drilled in one of these, when it is put on the conical screw of the lathe. It is then turned with a chisel to the shape suitable for the case in hand, and when thus cut it is used on the plate with fine powdered pumice stone. The whole surface of the plate is gone over until every scratch is removed. For removing the scratches in the festoons of a pink rubber gum, the hub brush wheel, Fig. 22, applies nicely. The final polishing is accomplished by a brush wheel with soft fine bristles, used with whiting and water.

No one who pursues any occupation or business, and does the same thing over and over, fails to see how the manipulation may be improved. His successes as well as his failures teach this. In the commencement of these articles we described (in the January, 1896, number of this magazine), how a ridged base plate could be quickly constructed, thereby saving much after trouble, by determining whether the vulcanite case which we had under construction would adhere or not.

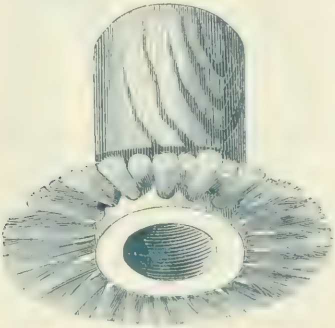

FIG. 22.

We have found, since this description, that it was often difficult to remove the modelling compound cap (shown by Fig. 2 on page 3 of the January 1896 number), from the cast, as also that the metal would frequently escape, while pouring it, between the cap and the cast, and that this would occur although we took the precaution of surrounding the cast and modelling compound cap with moulding sand. All this entailed trouble, and to save useless trouble we should always endeavor. Instead, therefore, of moulding a modelling compound cap over the wax base plate, as shown at that time, soften some wax and form it into a long roll like a lead pencil. Apply this to the cast as shown by Fig. 24. Having placed on the cast a thin plaster air chamber in its usual position, next form the base plate as shown by Fig. 24.

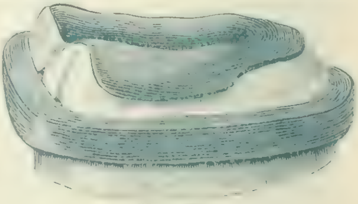

FIG. 24.

This is then greased and Plaster of Paris poured over the entire surface, as shown by Fig. 25. The plaster cap is then removed from the cast, Fig. 24, and gates cut into the cap, as shown in Fig. 1, page 3, of the January, 1896, number, to permit the ingress of the fusible metal. The wax is removed from the cast, Fig. 24, and the base plate also, then the plaster cap, Fig. 25 is put in position, the metal melted and poured into the interspace so as to form the plate. This plan effectually prevents the escape of the fusible alloy when poured.

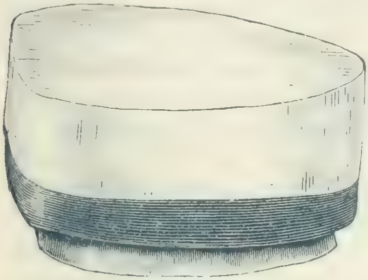

FIG. 25.

Should there be a protuberance of the ridge, as shown by Fig. 26, a core is made with plaster; as shown by Fig. 27. The wax is then applied, as shown by Fig. 24, and the plaster cap made, as shown by Fig. 25. A plate thus made, although it may not come over the front of the alveolar ridge, will nevertheless demonstrate whether the adhesion will be perfect or not, almost as well as if it covered the entire front of the alveolar ridge.

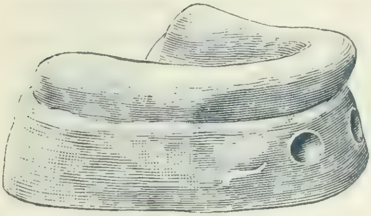

FIG. 26.

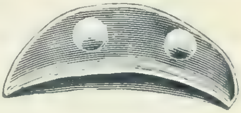

FIG. 27.

When there is no protrusion of the ridge there will be no need to make a core such as we have described.

## UNION OF THE AMERICAN AND SOUTHERN DENTAL ASSOCIATIONS.

BY THOMAS FILLEBROWN, M.D., D.M.D., BOSTON, MASS.

THE American Dental Association was formed as a more perfect organization to succeed the American Dental Convention, which it soon supplanted.

The Southern Dental Association was organized to supply a need which can now be better met by one large truly national body.

Both Associations have done good work, and each has supplied a want existing in the professional life of this nation.

Both have been practically local societies, though ostensibly national. The Southern has been limited by its name and its practice. The American has continued too much an Eastern institution, and has hardly kept pace with the march of progress. Its methods no longer serve its best interests; and there need be no surprise at the loud call that is heard for a reorganization and the adoption of methods that shall infuse new life into its councils.

The vital question to-day is, how to form and organize a society which shall be truly national, and serve the needs of the dental profession of this country.

The most natural course seems to be a union of the American and Southern Dental Associations in one strong, national society, with a constitution which protects all interest, invites the best efforts of all its members, and provides for progress and enlargement in the future.

The profession united in one national association will respect itself more than it can while divided, will be more influential at home, and thus be able to do more to elevate professional character, and make the influence of the dental profession in America more potent in all its relations with the world.

The social element is one of the most powerful forces for the progress of humanity, and this will be greatly strengthened by union. Only few men feel to afford the time to say nothing of the expense to attend two series of meetings in one season both serving the same end, hence under the present dual organization many are deprived of the satisfaction and benefit of personal acquaintance. In one association the members from the East, South, and West will come together at regular periods, compare experiences, offer mutual suggestions, and enlarge, deepen, and strengthen their personal relations. All those who were fortunate enough to attend the union meeting of the American and Southern Association in Louisville in 1888 realize how pleasant it is to dwell together in unity.

By union the importance of the State societies will be enhanced, as the meetings of the larger body in each section of the country will be less frequent; the leading men of each State will naturally interest themselves in their home societies and make their proceedings more valuable, and thus be more able auxiliaries to the National Association.

In 1894, at Old Point Comfort, the American Dental Association appointed Thomas Fillebrown, J. Y. Crawford, Louis Jack, B. Holly Smith, and J. N. Crouse a committee to promote the cause of union of the two Associations, and invited the Southern Dental Association to appoint a like committee for the same purpose.

In response to the invitation the Southern, at its meeting in Atlanta in 1895, chose Drs. L. G. Noel, E. P. Beadles, J. T. Calvert, F. Peabody, and J. R. Knapp, a committee to consider the subject with the committee of the American. These committees have sought to obtain a consensus of opinion as to the desirability of union and the essential points of a plan which would prove acceptable to the members of the Associations, which would protect the interests of the minorities, and at the same time provide the best working plan at the present time possible.

At first considerable opposition to the movement was expressed. The opposition seemed based upon the fear that rights would be denied the minority and also upon affection for the old Associations. As the matter has become better understood opinion has been more and more favorable to the movement. The votes of both Associations, although not decisive, have invariably been favorable to a union.

A plan including the following provisions meets with quite general acceptance.

1. It seems desirable to take a new name, one distinctly national; just what it should be has not yet appeared. The committee invites suggestions from any member interested.

2. Divide the country into divisions, South, East, and West, and meet alternately in each section. This will insure a meeting in each portion of the country every third year.

3. Organize the new Association in sections the same as the American is now, but have the president (or executive committee) appoint chairmen known to be competent and interested to do the work. It is believed this would lead to more effective and better work. Often in the past but few would be present at the organization of the sections, and men neither fitted nor interested would be chosen to official positions.

A return to the old committee plan has been sometimes advocated. This plan has been followed in the Southern, and the results of the past few years have not been especially encouraging, for its adoption in a new Association.

The plan of sections above proposed contains the essentials of the committee plan, but it makes it obligatory upon every member to join one of them, and insures an efficient head to organize and lead the work.

5. A more intimate relation with the State societies may be promoted by providing that they become practically branches of the National Association, and also by making it the duty of societies sending delegates to make a report of the year's work of the society to the Association.

6. Provide for membership of permanent delegate and honorary members as the American Association does now.

7. Choose a president at large, or from the section in which the last annual meeting was held.

Choose one vice-president from each section, the vice-presidents to be of equal rank, and not first, second, and third, as is now the case in both Associations.

8. To many it seems desirable to change the date of the meeting to some time in September, so that members will come fresh from their vacations ready for work, instead of tired out at the end of an exhausting year. The change would also avoid the excessive heat of August.

While the College Faculties Association and the National Board of Dental Examiners have done a great work for the uplifting of the profession, they have thus far been a direct injury to the interests of the National Associations.

The Southern has suffered because so many of her members have necessarily neglected its meetings to attend the meetings of the Faculties and Board of Examiners which have been held at the same time and place as the meetings of the American. The American has suffered severely by the meetings of the Faculties and Board of Examiners overlapping its meetings and absorbing the attentions of otherwise active members.

This can be remedied in one of two ways, either by the Faculties and Examiners meeting at another time than that of the National Association, or by the meeting being held a week earlier at the same place as the National Association. The latter plan is very likely to be tried the present year, and its effects can be then properly estimated. It is quite reasonable to expect the meeting of the Faculties Association to be called as early as the Friday before the time of the meeting of the American and the Southern Associations at Old Point.

If the Board of Examiners shall also meet early, the work of these bodies will be completed, and the members be left free to engage in the work of the National Association.

This is certainly one of the most important considerations for the interests of all concerned.

Dr. W. C. Barrett, at the last meeting of the American Association, and Dr. A. H. Thompson, in an article in a late issue of the *Dental Practitioner and Advertiser*, and several other interested members, have expressed the conviction that division associations should be formed to meet annually as parts of the national society. It is undoubtedly a wise and desirable thing to do, and it seems now quite possible to carry out this idea by providing for it somewhat as follows:

1. The members of each division South, East, and West, may form one or more branches to meet annually except the year the National Association meets in the same division.

2. Each branch shall manage its own affairs subject to the constitution and regulations of the parent society; elect its own officers and pay its own incidental expenses.

3. Each branch to receive delegates from societies within its limits, and they shall have the same standing in the National Association as those joining direct from local societies.

4. The proceedings of the branches to be sent to the National Association for publication in the transactions of the year.

The details of a plan to accomplish this result can be arranged which will not interfere with the customary working of the National Association. This plan will prevent the destruction of the present societies, and thus remove the principal objection that has been raised against union. One branch would be practically the Southern Association, and the Eastern would include a large proportion of the American membership.

The West might reasonably form two branches. The Western branch and the Pacific branch. Eventually the best interests of the profession may be served by making four divisions of the country. At present we shall probably better succeed with three.

This article does not presume to be exhaustive, but only suggestive.

The discussion of the subject will show us the best way.

The committee has no plan nor desire save to formulate the wishes of the members of the two associations and invite suggestions as to the points mentioned, or any others which it seems desirable to have considered.

## SELECTED ARTICLES.

# SOME NOTES ON THE PREPARATION OF CAVITIES.

By S. H. Guilford, D.D.S., Ph.D.

Whilst there is nothing strikingly new to be presented under this head it may be well to call attention to and emphasize some cardinal principles pertaining to this important subject.

As the preparation of a cavity bears the same relation to the completed filling as the foundation or substructure of a house bears to the completed edifice, the importance of careful and skilful manipulation in the earliest stage of the work cannot well be overestimated.

The success or failure of a filling is probably more largely predetermined by the manner in which a cavity is prepared than by any subsequent part of the procedure.

The three essential considerations are:

1. Gaining proper access to the cavity.
2. Excavating the cavity and giving it the proper retentive form.
3. Proper shaping and treatment of the cavity margins.

Most beginners and inexperienced operators are apt to make the fatal mistake of giving themselves too little space in which to operate to advantage.

On the exposed surfaces of the teeth, that is, all except the approximal ones, we have an abundance of room in which to operate, but on the obscure or approximal surfaces there is usually little or no space provided for our accommodation. We must therefore create such space as we need as best we can. Fortunately for us the enveloping membrane of the root of a tooth is capable of considerable compression, and we are thus enabled to press the teeth apart sufficiently for our purposes.

By the employment of different means we can separate them slowly by *gradual* pressure or more quickly by the *immediate* application of force. Sometimes the former plan is better, sometimes the latter, and very frequently a combination of the two is the most desirable.

Elastic rubber wedges are perhaps most generally employed and are very efficacious, but the rapidity with which they operate causes such irritation of the nerve filaments in the pericementum as to be productive of great tenderness or pain. This may largely be avoided by giving more time to the operation and proceeding more gradually.

A very thin piece of rubber introduced at first and gradually followed by others very little larger, will very much lessen the discomfort of the operation.

Where the teeth are very close together and firmly set, a single thickness of dam rubber will start them in their movement, and if this be followed on the first or second succeeding day by a double thickness of the same, and this in turn by a section of small rubber tubing, we will accomplish our object with the minimum of discomfort to the patient.

A better and more comfortable method, however, is to start the separation with thin rubber and follow this with wooden wedges or slices of cork. The latter operate less quickly and consequently produce less pain.

Cork is an especially good substance to use for the second stage of separating, because it can be introduced without much effort, adapts itself to the adjoining surfaces and has a clinging quality which prevents it from slipping out of position. Teeth rarely become tender when it is employed.

Cotton separates slowly and is almost painless in its operation. It can be packed tightly between the teeth at their contact points, and if a ligature be then passed through the interdental space above it and tied around below it, it will be still further compressed. If the teeth are kept dry while this is being done and the cotton then touched with a little sandarac varnish and it allowed to dry, the cotton pledget will rarely move from its position.

Narrow linen or cotton tape is a most excellent separator, although not a rapid one.

It has the advantage of being both inconspicuous and painless in its operation.

By introducing one fold the first day, two the second, and so on, all needed space can be comfortably gained. Patients can be readily instructed in its use and thereafter perform the operation themselves.

Immediate separation is accomplished by means of some form of mechanical separator.

Any mechanical separator, if operated quickly, will cause pain, but by giving the screws slight turns at intervals of several minutes and not hurrying the operation nearly all pain can be avoided. A good plan is to start the separation with rubber or cotton beforehand and finish with the separator at the time of filling.

Children's teeth move so readily that all needed space can be gained by the separator at one sitting, thus doing away with the annoyance of slow wedging.

When teeth present for filling that have been separated by wedging, and have not recovered from the soreness, the application of the separator will give immediate and positive relief by holding them firm during subsequent operations. It is the jarring of the tender tooth that causes pain. When it is firmly held by the separator there is no movement and consequently no pain. With suitable space once gained we are ready for the next stage of the procedure.

### Excavating and Shaping the Cavity.

Most cavities that are small and reasonably accessible can be readily opened with a pointed fissure bur. Being pointed and round it easily enters a fissure or small cavity and evenly opens and enlarges it. This accomplished, the decay may be removed and the cavity shaped by means of round or oval burs or excavators of proper form.

A bur with sharp angles like the "inverted cone" or "wheel," should not be used on the inside of cavity on account of the angular grooves that it produces.

The same is true of excavators with sharp angles.

The spoon excavator in its various forms is most suitable for removing decay and shaping the cavity.

In giving to the cavity a retentive form deep undercuts or grooves should be avoided, as they weaken the walls and are hard to fill properly. This is especially true of the cervical walls of approximal cavities.

Any grooving for retentive purposes should be shallow and confined to the dentin. In the enamel or even very near it they should not be made. In any case it is better to have the whole cavity of such form (slightly larger within than at the orifice) as to retain the filling, than to depend upon grooves or undercuts at certain points.

Shallow pit or grooves for starting the filling are often helpful, but they should be gradually abandoned as one becomes more skilful in operating.

In a compound approximal cavity, involving any portion of the occlusal surface, we can generally take advantage of a natural fissure or pit for the final anchorage of the filling. This will obviate any necessity for grooves or undercuts in the lateral walls, especially where a matrix is employed to support the filling until the occlusal surface is reached. In cavities where the depth is greater than the diameter no internal enlargement is required, for the resistance offered by the cavity walls will keep the filling securely in place.

Cavities of this form are often found in the basilar pits of the superior incisors and on the buccal surfaces of the inferior molars.—*The Stomatologist.*

## ABSTRACT OF LECTURE ON ORAL SURGERY.

### BY HENRY C. BOENNING, M.D.

Reported by RAY L. MAGOON, Student and College Stenographer.

I finished my last lecture, which was the first upon the course of oral surgery, with the consideration of epithelioma, and, as you probably remember, I told you that it was a disease, the treatment of which was a *prompt and thorough removal.* At the clinic last Saturday I showed you a marked case of the disease, upon which I operated, and emphasized the fact that in cancer there is but one thing to do, and that is to cut it away freely, removing not only the diseased parts, but also the surrounding tissues, and all lymphatic glands in the vicinity of the growth.

The next subject we will consider is *Cancrum Oris.* This is a most fatal disease. It affects the children of the poor where the hygienic surroundings are bad, the food poor and the clothing insufficient. It is due to the extraordinary growth of micro-organisms which invade the wretchedly nourished tissues. Colonies of streptococci infiltrate the parts, form zooglœa masses in the vessels and block them, and after three or four days there appears upon the lip or cheek a dark red or purple spot which rapidly extends. An offensive odor is given off, blebs form as the result of the accumulation of gases beneath the epidermis, the tissues are gangrenous, and after a time the whole mass sloughs out exposing the teeth and gums. This is the disease called cancrum oris, and, remember, it is caused by micro-organisms. The treatment is unsatisfactory, the majority die, but plenty of sunshine, fresh air and good food will be prophylactic as well as valuable in the treatment, and more so than medicines, which do but little good. A good food is egg albumen. Break the white of an egg into a cup of water and add a teaspoonful of champagne, if this can be purchased. Give this every hour or two. Also all other food that can be taken. Also strychnia, internally. For the local condition, remove all the dead tissues, curette the parts, apply a strong solution of bichloride of mercury or the cautery; but you must not use the cautery if you have administered ether, as the hot iron will ignite the ether vapor, and the flame might burn the structures of the mouth and air passages. It is, therefore, best to use chloroform or to benumb the parts with cocaine, being, however, very careful in using either, so as to guard against any ill effect on the heart.

There are many kinds of tumors that may affect the lips or cheeks; among them the most common is the *cystic tumor*. The sebaceous glands of the skin secrete an oily substance which keeps the skin soft and pliable. The ducts of these minute glands sometimes become blocked, but the glands keep on secreting the sebum, which accumulates, and little by little a sack is formed which is called a cyst. A cyst tumor of this kind is called a sebaceous tumor. Some of you may be familiar with these tumors in other localities; thus on the scalp they are called wens. Any cystic tumor is one that has a sack and contents. Ordinarily the diagnosis is easy. A nodule forming very slowly, frequently single and without pain. It is round and smooth, and when you press upon it, it feels like a cherry under the skin. The same may be said of a fatty tumor; but if you press with the finger at the side of a fatty tumor, it slips or dodges the pressure. A sebaceous cyst is more fixed. When they occur upon the face or lips they are both unsightly and an inconvenience, and should be removed. To do this skillfully, have the patient wrinkle the part in which the tumor is located, and notice the normal wrinkles, and then make your incision parallel with such wrinkles, so that the resulting scar will be but little noticed. If between the brows, make the cut vertical to correspond to the wrinkles produced by the contraction of the corrugator supercillii. The wrinkles on the face are always at right angles to the direction of the muscular fibres, and this should be remembered when incisions are made here.

To remove a sebaceous cyst, cut down upon the tumor, but not into it, and dissect it out very carefully, endeavoring to remove it entire, if possible, without opening the sack, as the sack structure is glandular tissue and has the very remarkable property of continuing the sebaceous secretion if the whole sack is not removed. If you cannot get the sack out entire, then open it freely, discharge its contents and dissect it out with care.

One of the most important diseases which are found frequently about the lips and cheeks is *syphilis*. This formidable malady is not only disastrous to the patient, but also dangerous to the operator upon these parts. One of the most dangerous manifestations of this disease was that of the young man I had before you in the clinic last Saturday. He had been told he had "too much acid in the blood" and that this produced the rheumatic pains and sore mouth of which he complained. I brought this case before you, because of all the cases you will ever see, this one will be the most important to you as dentists. In operating upon such a case you not only run a risk of contamination yourself, but unless you are very cleanly, you may infect your other patients by the use of your instruments; hence, BE CLEAN. Chancre may be seen upon the lips, generally the lower, and the infection may occur from a variety of modes of contact with the syphilitic poison. A goblet at a public drinking fountain may be the vehicle of contagion; a kiss with a person having mucous patches may inoculate another. When the lips are chapped, infection will occur more readily. The initial sore or chancre is almost always single; its base is hard; as a rule it is painless; it is covered with a grayish discharge. Already at this stage you notice under the jaw, more or less lymphatic enlargement, in fact, *bubo.* After some weeks, the sore may heal, the bubo may become smaller, but it does not disappear. After the lapse of about six weeks from the beginning of the sore, the patient complains of feeling badly. He is feverish, has headache and the skin looks muddy or cloudy. A few days later the skin becomes mottled and covered with rose-colored spots, which, when pressed upon, disappear, but reappear directly. This rash is known as roseola maculata, and is an evidence of secondary syphilis. It may be that the joints feel stiff, and pressure over the back of the neck shows some tenderness due to the enlargement of the post-cervical glands. The glands all over the body become enlarged, they feel like marbles under the skin. At this time, or soon after, the patient may complain of soreness on the inside of the cheeks and of the tongue. The sides of the tongue and inside of the cheeks are seen to be covered with a whitish film, in patches at first, afterwards confluent; this may spread over the sides of the tongue, mouth, hard palate and soft palate. These whitish patches are known as mucous patches and are highly contagious. Instruments or anything brought in contact with these patches can convey the poison. After a time pimples appear on the scalp and the hair loosens and falls out.

Mucous patches may appear at any of the mucous outlets; about the rectum and vagina they form condylomata. The patient may suffer with violent headache and rheumatic pains. If now he submits to anti-syphilitic treatment, inside of a week there is a wonderful change; the symptoms disappear and the man is apparently sound. Under the use of these remedies and a vigorous local antiseptic treatment, it seems as if the disease fairly melts away. If the patient neglects to keep up the treatment, however, sooner or later he will come back with the lesions of syphilis much more pronounced and grave. He may have gummatous tumors, or bone disease, as for instance of the hard palate. Upon examination you may find the roof of the mouth diseased and discharging carious bone. The hard palate may be riddled with sinuses. There may be exfoliation of bone for months, and even large pieces of dead bone may discharge. Sometimes, tooth after tooth falls out and the patient becomes indeed a wreck. He goes, perhaps, to the hot springs of Arkansas, and there he often improves wonderfully by submitting to vigorous treatment and discipline.

Suppose we recognize a case of labial chancre, perhaps with mucous patches, what are we to do?

We tell the patient that it is necessary for him to undergo a line of treatment called anti syphilitic. That he must remain under treatment not less than three years. That he must do everything in his power to improve his physical condition. He often promises everything and but seldom carries out the treatment as he is directed.

### MEDICINES.

After using countless remedies, we all come back to mercury. It is in this disease almost a specific. This prescription is very serviceable:

℞

| | |
|---|---|
| Hydrargy protiodidi | gr. x |
| Pulvis opii | gr. viij |
| Antimonii et potassi tart | gr. j |

M. Make into forty pills and take one four times a day.

The object of the mercury is to act upon the virus in the system, to destroy it. The opium prevents the mercury from irritating the bowels and quiets the salivary glands. If you have to deal with a very malignant case, increase the mercury, or use gray oil hypodermically. The ingredients of the prescription may be changed to suit different cases and conditions. The antimony had best be omitted in weak patients, but in the powerful increase the antimony. I consider the addition of antimony to the prescription of great use.

I remember, many years ago, while resident at the Philadelphia Hospital, the case of a man who had a most obstinate papular syphyloderm. In this case mercurials had been exhausted, but with no effect. The patient had been a blacksmith, and was a robust, powerful man, and nothing seemed to make any impression upon him. At my suggestion, tartar emetic in good doses was added to the prescription, and in two weeks' time the papular eruption was gone and nothing but the spots of pigmentation left. This result made an impression upon me, and I have ever since used antimony in rebellious cases of syphilis.

If the patient shows any marked ptyalism, the mercury must be reduced. The later lesions of syphilis, such as gummata, bone disease, require also the use of iodides, especially iodide of potassium. The following is a good prescription:

℞

| | |
|---|---|
| Iodide of potassium | ℥ ss |
| Fluid extract sarsaparilla | f℥ j |
| Paregoric | f℥ ij |

M. Take a teaspoonful in water three times a day.

A patient may consult you for some trouble about an artificial plate which he cannot wear. He may tell you that he has some soreness of the roof of the mouth and floor of the nose. Examine the plate; examine the mouth and nose, especially if the plate is one that has been worn a long time with comfort. Such an examination may show you the lesions of syphilis; perhaps a gummy node of the hard palate. Ask the patient if he has had treatment for any blood disease; if he has, he will understand you; but do not say to him that he has syphilis, you may be mistaken; but tell him that he has trouble in the roof of the mouth and that his blood is badly out of order. Give him the iodide prescription and watch the case. At the best he will improve but slowly. Use local anti-syphilitic agents and local antiseptics.

Dentists see a great many cases of syphilis of the mouth and therefore they should be able to recognize it.

Chancre may occur on any of the oral structures, for instance. I know of a case of a man who stopped at a seaside hotel. He was in the habit of using toothpicks and always took a few out of the public tray on the counter. Sometime after he developed a sore on his gum, with enlarged cervical glands, and the disease was diagnosed as chancre; a diagnosis subsequent developments proved to be correct. Being a man of exemplary habits, he insisted upon investigation; and after a time the doctor of the house admitted that he had treated one of the clerks for mucous patches of the mouth. This clerk was watched and it was observed that he was in the habit of picking his teeth with the toothpicks in the tray and then tossing them back into the dish, and in this way, beyond doubt, the specific virus was conveyed to the victim of his foul practice.

Remember this case; you may meet a like one later in life, and then this knowledge will be valuable to you.

Herpes labialis is the familiar "cold sore." It consists of groups of vesicles that appear on the cheeks or lips, generally in crops and after some feverish condition. At the site at which they appear, the skin becomes red and tense, and burns, a small blister or a group of them appear, discharge their watery contents, become crusted over and disappear after about ten days. When they appear near the end of serious diseases they are considered a favorable sign. They are best treated by salves containing sedatives. An excellent application is a six per cent. solution of cocaine in glycerine and camphor water.

A peculiar condition of the lip is sometimes met with in which the structures are immensely enlarged, namely, hypertrophy. It may occur as the result of repeated attacks of inflammation of the lips or as the result of irritating labial fissures, resulting in inflammatory exudates which organize. These in time become firm and the lips permanently enlarged; also every cell and fibre is probably enlarged, and thus we have hyperplasia and hypertrophy of the lip. In truth, these two conditions generally coexist and excite a great deal of comment. The lip may protrude like that of an Ethiopian. The patient is much disfigured, and what can be done? Look for the cause. Anything that will require correction, whether in the oral cavity or distant part of the body, correct it. If a dental operation is necessary, do it at once. The deformity may be remedied by excising an elliptical piece on the inside of the lip. Stitch together with uninterrupted sutures and treat antiseptically.

In these cases do not scar the outside of the face or lip if you can prevent it.

The very opposite to this condition is known as atrophy of the lip. The lip may waste so as to be transparent. The contour of the teeth is plainly seen. This condition is generally associated with some nerve lesion and must be studied out with great care. Something may be done by rubbing the parts with oil or tallow. Animal oils will have more effect than vegetable oils; mineral oils do not seem to have any effect in this condition.—*The Stomatologist.*

## TO DIAGNOSE PULPITIS.

Since the recitation of cases seems to be in order, I will refer to one that I have recently had. It relates to the subject of pulpitis. The question has arisen as to the difficulty of diagnosing these cases. It is difficult sometimes to locate the pain. Patients frequently refer it to some remote point. A lady came to my office early in July saying that she was having trouble on the right side, pointing to the interproximate space between the second bicuspid and first molar. She said the pain was located there. I made a careful examination and could find no cavity. The pain was not severe and I told her it was probably only temporary. While I was absent from the city she had a recurrence of the pain and had the tooth examined by some other dentist, and he was under the impression that there was a cavity in the first molar. However, she did not have anything done, and came to my office one day after I had returned. She came in the midst of excitement and began to take me to task for overlooking a cavity and allowing her to suffer this pain. She pointed out the tooth which she thought was giving the trouble. She pointed definitely to the second bicuspid. I examined it, and could find no cavity in either the first molar or second bicuspid.

My method of diagnosing these cases is this: Instead of cold I use heat. I take a cone of heated gutta-percha, which is tenacious and better than a hot instrument. It will cling to the surface of the tooth. I applied this to the second biscuspid and she flinched. I said: "Is that the character of pain you have been suffering?" She replied, "No." I. then went from one tooth to the other until I came back to the third molar, which had a large oxyphosphate filling in it. When I applied the heat to it she flinched again, and exclaimed, "There, that's the tooth. I told you all the time it was that one," and she put her finger on the second bicuspid. I drilled through the oxyphosphate filling and struck a case of pulpitis. I destroyed the pulp and this was the end of the trouble. This is another instance illustrating the fact that we can not take a patient's word as to what particular tooth is giving trouble. We must find it out ourselves. The rule I follow is to test one tooth after another. The patient will flinch when a living tooth is touched, but it will not be the same character of pain that they have been suffering. It is momentary and passes away. But the moment you strike the right tooth they will say, "That is the kind of pain I have been suffering." —Johnson (C. N.), *Dental Review.*

## CATAPHORESIS.

### Dr. M. L. Rhein, New York.

Local anesthesia of dentin has for many years been eagerly sought by both patient and operator. Many methods have been advocated, all of which have had advantages, but all have been subject to the disadvantage of subsequent hyperesthesia. The use of cataphoresis will prove no exception. To demonstrate to myself the practicability of producing anesthesia of the dentin by the cataphoric use of cocain I made a special visit to Newport, and had a central incisor of my own anesthetized in this manner by Dr. Gillett. My object in doing this was to enable me to accurately judge of the sensations during the stage of anesthesia, and any that might follow. It is difficult to obtain a satisfactory opinion on this subject from the statements made by patients.

Total anesthesia was produced without a particle of sensation on a central incisor which had been rendered exquisitely sensitive by the inroads of erosion. The current was applied for about twelve minutes, when there was no question of the lack of sensibility in the dentin of that tooth, though it was not operated on. This stage lasted for about thirty-six hours, and was immediately followed by an increased sensibility of the tooth, which, after a lapse of twenty-four hours more, had become quite sore to the touch, and felt as if a severe attack of pericementitis was commencing. No therapeutic measures were used to assuage this sensation. The hyperesthesia appeared to have reached its zenith at about the thirty-sixth hour, and then suddenly disappeared, without any subsequent recurrence or annoyance to the tooth.

In 1889, when chlorid of methyl was introduced to the profession for producing local anesthesia of the dentin, especial stress was laid on the necessity of using a very small quantity to avoid as far as possible the subsequent danger of hyperesthesia. The same caution is necessary in the cataphoric use of cocain in dentin. Many disastrous results have been reported since the introduction of the Wheeler fractional volt selector. No discredit for these results should be attributed to what is at present probably the best rheostat we have for this purpose; the results are very likely caused by too much cocain.

It seems likely that in these conditions there exists a law of equivalence which makes the length of the stage of hyperesthesia equal the length of the stage of anesthesia.

During the exposition on this subject by Professor William J. Morton, before the First District Dental Society, Professor Morton called our attention to the possibilities of medication of the tooth in the way of bleaching by cataphoresis, and also in the way of introducing medicinal agents into the peridental tissues. At the same time he demonstrated the therapeutic advantages of electrolytic medication in the peridental tissues. While the use of cataphoresis for bleaching purposes has been very vigorously prosecuted for some time past, nothing definite has been heard from the possibilities of treating abscesses, pyorrhea and dissolving uratic concretions on the roots of teeth by means of this method.

In the treatment of these pathological conditions there is opened a field for harmless experimentation, to which the co-operation of all practitioners possessing the means by which they may employ cataphoric medication is invited.

The latest marvel which has illuminated the world from the electric sphere has been the wonderful discovery of Professor Roentgen, so well known as the "X-ray." The possibilities to which the shadowgraphs and radiographs (to say nothing of the fluoroscope) may be put in a medical way have received such universal attention by the public press during the past few months, that it is no doubt well known.

At a recent special meeting of the New York Odontological Society, Professor William J. Morton demonstrated the fact of the invaluable aid which this may prove in our particular specialty. Before this demonstration, it was a question whether it was possible to obtain a picture of the roots of the teeth, locked as they are between the plates of the alveoli. He demonstrated, however, that on account of the greater density of the roots it was possible to penetrate through the alveolar plates and obtain a perfect picture of the entire tooth from the crown to the end of the root.

All doubt of the practical adaptability of the X-ray for diagnosing hidden dental lesions around the outer periphery of the root have disappeared after this demonstration, and it opens another door to the work of the dentist.—*Cosmos.*

## PYROZONE.

CONRAD E. WETTLAUFER, D.D S.

Concerning its use for bleaching. The first procedure will be to cleanse the tooth thoroughly from all decay. In case of an incisor, apply the rubber dam to the one to be bleached, and to as many adjacent teeth as may be necessary to obtain space and light. The teeth not to be bleached should be covered with wax or vaseline, to prevent the pyrozone from attacking them. If of a soft texture, when cleansed, wash out with 95 per cent. alcohol, placing a stopping of some suitable material up the pulp canal, such as chloro-percha, oxichloride of zinc, with fibers of cotton, or whatever you are in the habit of using in your practice.

Of course you are supposed to have previously reduced the canal to an aseptic condition. After drying out thoroughly with alcohol, wash out with aqua ammonia and dry well. Then take a probe, either gold or platinum, twist a pledget of cotton around it, saturate with pyrozone, 25 per cent. solution, and insert in the tooth and canal, squeezing out the pyrozone.

Then apply hot air on both labial and palatin surfaces to evaporate quickly, and continue in this way till the tooth is bleached to its natural color. A dense, hard enamel and dentin will occupy twenty, forty or sixty minutes, and in some cases twice as long; a soft dentin I have bleached in ten or fifteen minutes. The ether in which the pyrozone is dissolved will penetrate the canaliculi and absorb the protoplasmic matter, and some consideration must be given this fact in the subsequent filling of the tooth, to prevent a return of the discoloration.

I would recommend the wiping out of the cavity and canal with either a thin solution of white shellac, gum copal, or Canada balsam. The Canada balsam or white shellac will penetrate by capillary attraction quite a distance through the tubuli, and will also make a water-tight coating in any checks of the enamel, which are so often manifest in devitalized teeth.

I have never met with failure in the bleaching of a tooth in the manner here described. Let me cite a case. Mr. A., aged 40 years, came to me with a left central incisor very badly discolored, which had been so for twenty years. I treated the tooth as above for nearly two hours, and succeeded in restoring it to its normal color. The discoloration returned in a marked degree in three or four days. I attributed it to the presence of a gold filling in the tooth. I removed the filling, treated the tooth as before for half an hour, and succeeded in restoring it to its natural color, and it has remained in that condition ever since. This to me proved two things, viz., that pyrozone is a good bleaching agent, and also that a gold filling in a tooth to be bleached must be removed.

I have also found pyrozone very useful in the insertion of all kinds of crown and bridge work. We all know that bleeding of the gum gives us great trouble in these operations. I obviate this by applying a 25 per cent. solution of pyrozone to the gums, which acts as a styptic, and in my hands has never resulted unhappily. I also use this remedy in the same manner for the insertion of gold fillings at cervical margins, one or two applications rendering the gum perfectly dry for ten or fifteen minutes, which is ample time for the insertion of an ordinary filling. In abscess with fistulous opening, I use a three per cent. solution inserted with a hypodermic syringe, forcing the solution through the fistulous opening. Its use is not as painful as that of peroxid of hydrogen. When the alveolus has been perforated by the progress of suppuration, and the soft tissues have not yet sloughed, I advise free lancing over the congested parts, and the insertion of a pledget of cotton, saturated with a 25 per cent. solution, which should be allowed to remain for a few moments.

For a putrescent pulp, I apply a five per cent. solution of pyrozone, which at once disinfects, permitting the removal from the canals of disorganized tissue, without the disagreeable odor which is often so offensive to both patient and operator.

I also use a three per cent. pyrozone for the removal of green stains on teeth. Apply it with an atomizer, spraying the teeth. It is efficacious, and pleasant to patient and operator.

For pyorrhea, after removing thoroughly all the salivary and sanguinary deposits from the necks and roots of teeth, $H_2 O_2$ will be found the best agent as a chemical cleanser and antiseptic for washing out the pockets, bringing the *debris* to the surface and putting the parts in hygienic condition. I also instruct the patient to use an atomizer, spraying the gums and mouth with a three per cent. solution of pyrozone and listerin, equal parts, three times daily, till the disease is to a great extent conquered.—*Dental Practitioner*.

## EDITORIAL.

### THE UNION OF THE AMERICAN AND SOUTHERN DENTAL ASSOCIATIONS.

We print in another portion of this issue the views of Dr. Thomas Fillebrown, chairman of a committee, appointed by the American Dental Association, to consider the subject of this amalgamation. It seems to us that the matter is clearly and fairly set forth and should be favorably acted on. "In union there is strength," and apart from this, the social side of the question, the bringing together of men, engaged in the same calling, from different sections of our great and immense country, cannot but be provocative of advantage, both for their general good as for the benefit of those they serve.

The idea of making these associations "a trunk," with the local societies "the branches," to which the doings of the year could be annually reported, is good, and must tend to the improvement of all. Nevertheless, there is much to be considered in such a union, and while sectional interests, perhaps animosities, might be opposed to the union, the welfare of those we serve and the improvements which must accrue from the large commingling of men and their interchange of views, apart from the social gathering, *should be* the incentive above all other considerations.

It would seem to us it would be well to take into consideration the place of meeting, if such a union be effected.

To form a National Association, as this one would be, the location of the national capital of the country would, as it were, be neutral ground accessible to all. The advantages of Washington, with its libraries, museums and other points of interest, offers a most judicious selection, and the yearly meetings held there would tend to greater social fellowships, more lasting friendships, and larger professional advantages than could be secured elsewhere. This, however, is a secondary consideration. Let the union be first effected and the place of meeting will follow, and, we are sure, be judiciously selected.—Ed.

## THE STOMATOLOGIST.

This is a new publication published in the interest of the Alumni of the Philadelphia Dental College. The second issue is before us, which contains two valuable and interesting articles, one by Dr. Guilford, the other by Dr. Boenning, both of which we reproduce in this issue. We presume the *Stomatologist* will be only issued during the session of the college. We wish it every success.—Ed.

## BOOK NOTICES.

Artificial Anæsthesia. A manual of Anæsthetic agents and their employment in the treatment of disease. By Lawrence Turnbull, M. D., Ph. G., Aural Surgeon to the Jefferson Medical College Hospital, Philadelphia; Late Honorary President to the Otological Subsection of the British Medical Association, and of the section of Laryngology and Otology of the American Medical Association. Fourth edition. Revised and Enlarged, With Illustrations. Philadelphia: P. Blakiston, Son & Co., No. 1012 Walnut St. 1896.

The author of this work pays a deserved compliment to Horace Wells in giving him the recognized authority for general Anæsthesia by nitrous oxide gas. This is quite complimentary to dentists, coming as it does from a medical man, and testifies the fair unbiased spirit.

Dr. Turnbull's work has been the authority on Anæsthesia almost from its first edition.

This edition contains considerable information on points and agents not alluded to in former ones.

He warningly alludes to the greater danger of Chloroform and the comparative safety of ether, a point which must be appreciated by all who are forced to use general anæsthetics.

The danger of Cocaine hypodermic injections are likewise set forth, in contra-distinction to the almost harmless use, by similar means, of its later and safer rival, Eucaine.

The book alludes especially to the obtunding effects as well as the safe use of Cocaine on the hard tissues by means of Electrical Osmosis.

Local Anæsthesia by the use of Refrigerants receive favorable mention, so that the work may be regarded as an exhaustive treatise on the subject.

The book deserves a careful perusal and would repay a careful reading.—Ed.

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Transactions of the American Dental Association for 1895 and 1896. Published by the S. S. White Dental Mfg Co.

We have received copies of these records and hold them in great esteem for the valuable papers they contain.—Ed.

## ILLINOIS STATE DENTAL SOCIETY.

The thirty-third annual meeting of the Illinois State Dental Society will be held at Peoria, May 11 to 14, inclusive, 1897. An excellent program is in the course of preparation. Members are urgently requested to be present. The profession, generally, is cordially invited. A reduced rate of one fare and a third has been granted from all points within the state.

Louis Ottofy, Secretary,
Masonic Temple, Chicago.

## AMERICAN MEDICAL ASSOCIATION.

This society will hold its semi-centennial meeting in this city next month, (June). The officers of the section on Dental and Oral Surgery—of which Dr. R. R. Andrews is chairman, Dr. Eugene S. Talbot, Secretary, A. E. Baldwin and M. H. Fletcher, Executive Committee—have prepared an excellent programme.

The officers and members of all the local societies of the city, as well as the dental profession of the city and vicinity, are cordially invited to be present and to take part in the discussion of such papers as will be submitted. Any dentist may become a member of this society by presenting his credentials of membership from his state or local societies and paying to the treasurer $5.00.

## PRACTICAL PLACE.

### Duplicate Models.

In order to produce duplicate models—and they are quite necessary and practical in cases of regulation—employ the following composition: Lime, 10 parts; fine sugar, 10 parts, and glycerin, 12 parts. Mix this thoroughly, heat, and press the original model into the compound, and after the latter has become completely hardened, deliver the model. Perfect duplicates can be made in the mold thus obtained.—Translated by Dr. B. J. Cigrand, from *Zahntechnische Reform*, November, 1896.

### To Remove Cement.

A piece of wet pumice-stone will remove cement from the mixing slab with neatness and dispatch.—Geo. M. C. Barnard.

### Gutta Percha.

Professor Gray uses in a cavity before filling with gutta percha, common resin cut in chloroform. The heated gutta percha is pressed in and adheres to the walls like cement. In the mouths of his own children he has had an opportunity of watching it closely, and finds it entirely satisfactory.—*Dental Register*.

### Aconite for Swollen Faces.

In the spring of 1887 my little daughter had an inflammation of the submaxillary glands which was prevalent at that time, and as she was suffering intensely I called in a physician to attend her. He prescribed a poultice made of hops, elm, musk, tar and goodness only knows what else, and as this gave no relief he lanced on both sides, disfiguring her face for life.

Before she recovered I was attacked with the same trouble and the doctor prescribed the "poultice," not knowing what else to do. It was applied in the morning and I wore it until evening, but then, being in agony, I sent my son to the office for my tr. of aconite bottle. When it came I unwrapped my face, washed it in cold water and then bathed it with the aconite, using about half an ounce. This afforded some relief, so I rested an hour and then bathed my face again with the tincture, using nearly an ounce; then went to bed and to sleep and had no more pain whatever, although the swelling did not entirely disappear for several weeks. When I told the doctor the next day what I had done he asked if I had "no fear of death," but he afterwards admitted that he had learned a lesson from the experiment.

In my practice I use the root tincture with good results on faces swollen from abscess, removing the stain with a wet napkin. Last February I was called by a physician to see his little daughter, a child of 10 years, who was suffering with abscess of the first left inferior molar. The whole family had been up two days and nights with her and her head was wrapped in a shawl, as the air hurt her face. I prescribed the topical application of tr. of aconite and plenty of it, and the removal of all wraps from her head. In two hours the child was easy and went to sleep, and her father said he had learned something. Thinking that others might profit by these experiences is my excuse for writing this.—By T. A. DAVIS, D.D.S., Warsaw, Ill., in *Welsh's Journal.*

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### A NEW FILLING MATERIAL.

The combination of silex, oxide of zinc and gutta percha, was found to be good to resist mastication, but the silex being so gritty the burnisher left a black mark on the surface of the filling. Many other combinations were tried but did not meet with satisfactory results until I tried the combination of

| | |
|---|---|
| White gutta percha | 8 parts. |
| Aluminum filings | 5 parts. |
| Oxide of zinc | 1 part. |
| Whiting | ½ part. |

This admixture I have been very much pleased with, and have named it "Aluminized gutta percha." It is easily manipulated, and holds its position in the cavity when firmly packed. I have not noticed any bulging, which is so common in the pink gutta percha.—DR. F. W. BLISS, in *Pacific Stomatological Gazette.*

### HISTORY OF DENTISTRY.

Dr. Geist-Jacobi, of Frankfort, Germany, has written a history of dentistry from 3700 B. C. to the present time. It is known that there were men practicing the profession of dentistry in Egypt at least 5000 years ago.

### A LOCAL OBTUNDENT.

By placing in the nares a little pledget of cotton saturated in a ten per cent. solution of cocain, leaving it for ten minutes, an upper central or lateral incisor may be so benumbed that it can be extracted or excavated with almost no pain. The nerve is anesthetized before it enters the root of the tooth.—DR. DAWBARN, in *International.*

### FOR CEMENTING ON BANDS AND CROWNS.

Dry the tooth and paint with shellac varnish before applying the cement. This will be found to give durable adhesion. Should the cement dissolve, the shellac will still protect the tooth and there will be no decay under the band. To retain regulating appliances, add a very little powdered pumice to the varnish.—W. G. LANGE, in *Cosmos.*

### PULP DEVITALIZATION.

To the vital fibers remaining in the root canal, apply chromic acid followed by lime water. Then wipe out with eucalyptus or cajuput. —DR. WILLIAMS, in *International.*

### AFTER-PAINS OF EXTRACTION.

A single drop of nitro glycerin—one per cent. solution—in half a glass of cold water is potent and reliable, and lasting in its effects. It is also of marvelous benefit in neuralgias and for the bad headaches following dental operations.—ED. H. BOWNE, in *Items of Interest.*

### SENSITIVE DENTIN.

For sensitive dentin Dr. Bogue uses the following: Veratrin and carbolic acid six grains each, with five drops glycerin and six minims alcohol.—DR. HANAFORD.

THE

Dental Office and Laboratory.

FOURTH SERIES.

VOL. XI. PHILADELPHIA, JULY, 1897. No. 4

# THE CONSTRUCTION OF CROWN AND BRIDGE WORK.

BY THEODORE F. CHUPEIN, D.D.S., Philadelphia, Pa.

[FIRST PAPER.]

This style of inserting artificial teeth has proved itself so useful and so comfortable to patients, that although much has been written on the subject, we are disposed to believe that much more may yet be said in further elucidation.

First, the preparation of the root:

Should there be much of the root standing, as well as an external fistula, the first effort will be the reaming out of the root canal. This, in our hands, is best accomplished with the Gates, Glidden or Maury drills, Fig. 1. We begin with the largest size, cleaning away the debris as we proceed, and gradually using the smaller sizes as the foramina of the root is approached. When this is done we use a Swiss broach, mounted in a proper handle, and with it, from its extreme attenuation, we are able to pass the broach through the foramina. These broaches should be drawn to the "blue" or "spring" temper to avoid the liability of breakage from too great hardness. They may be obtained of any dealer in watch materials. Once the foramina is opened freely, the medicines for the cure of the abscess, or the destruction of the septic matter, in the sack, at the end of the root, find ready access, and will be seen to issue in a frothy state or in little bubbles, at the mouth of the fistula. As to what medicines to use, we have found nothing to yield better results, after a practice of forty years, than full strength liquid carbolic acid. We employ this medicine by means of a small probe wound with a few threads of cotton floss, using a pumping motion, until the cautery appears, as we have stated, in the form of froth at the mouth of the fistula. When this is accomplished,

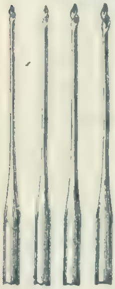

FIG. 1.

the white mark produced by the cautery is seen around the mouth of the fistula, and it is fair to presume that the entire tract of the abscess has been similarly cauterized. I have never known a case, treated in this way, and with the entire tract of the abscess thus cauterized, to have given after trouble. It is true that with the most persistent efforts, we fail, sometimes, to pass the finest probe through the foramina, and hence we do not accomplish the cauterizing effect of the carbolic acid, which we consider so necessary to a cure. This may be from a slight crook at the root end, such as we frequently find in lateral incisor roots, or from some of the debris of drilling choking the foramina. It has been said that the abscess syringe, Fig. 2, or the Hypodermic syringe, will meet such cases. In Fig. 2 (the Dunn's abscess syringe) the pipe is furnished with small rubber plugs. The syringe is filled and the pipe introduced into the root. The rubber plug is brought up to the root opening and pressure is brought against the rubber plug with an instrument held in the left hand while the rubber bulb is squeezed so as to force the contents through the foramina and along the tract of the abscess. Or, the opening may be filled with a plug of red gutta percha, and a small hole made through this with a heated old straight excavator. The pipe of the syringe is passed through this hole, and with a warmed ball burnisher the gutta percha is pressed well around the pipe. Pressure is then made on the rubber bulb with the view of forcing the medicines through the foramina, and along the tract of the abscess. Sometimes it may be accomplished by these means, but sometimes it fails. The cause is most probably due to the stoppage at the foramina, so that it is most important to pass a broach through the foramina. Much has been said and written about the use of coajulants in such cases, but our success with carbolic acid for the treatment of abscessed roots *with external fistula*, emboldens us to recommend its use.

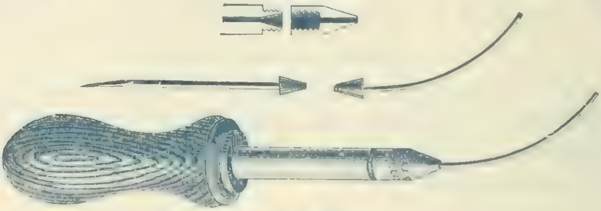

FIG. 2.

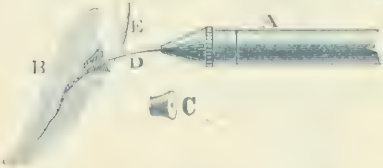

FIG. 2.

Where there is no external fistula, and there is sufficient of the crown left by which the rubber dam may be applied, we apply this *the first thing.* We cleanse out the root as has been recommended with the reamers, Fig. 1, pass the probe through the foramina and treat. As to the treatment in these cases we have lately been using the 25 per cent. etherial solution of Pyrozone, as we believed that the large amount of oxygen in this medicine would be beneficial, and that if used liberally it might be taken up by capillary attraction even through a tortuous root, and a cure effected in this way. For roots in the *lower jaw* we have used the Sodium per oxide as a treatment with success. We use this drug as follows: After the dam has been applied, the tooth well dried, and the canals cleaned and freed, we introduce the powdered Sodium dry into the roots, and with a fine probe work this down to the end of the root. Then we apply a minute drop of water. The chemical action produces heat and ebolution. The residue is cleansed away and dried, and another application made in the same way. This treatment is only applicable to teeth in the lower jaw, as it is not possible to carry the powder into the roots of upper teeth.

The cure of the abscess having been effected the preparation of the root end next claims our attention.

If the root end is level with the gum only a *face plate crown* can be inserted. The root end is ground level by means of the stump corundum wheel in the dental engine.

The root canal *is well countersunk at its orifice*, by means of a good sized round bur, and a piece of platinum plate, 30 gauge, well annealed, is fitted to the root end. A ball burnisher about the size of the round bur used to form the countersink in the root end is now used. The face plate is burnished into this depression, and the dowel pin forced through the face plate into the root canal. The two are now carefully removed without disturbing their relation and soldered. The object of countersinking the orifice of the root canal, and of burnishing the face plate into the depression, is for the purpose of holding the solder which unites the face plate to the dowel pin. If this were not done, when the protruding end of the dowel pin was cut, filed or ground off, there would be so little solder holding the pin to the plate that this, the foundation of the crown, would be very weak; so this is an important step. The face plate and pin being soldered they are replaced into and on the root, and any little inaccuracy of fit of the face plate is corrected by means of foot pluggers or any other applicable instrument. The protruding end of the dowel pin may now be cut off level with the face plate and a tooth ground to fit against the root end. *Straight pin teeth are preferable always to cross pin teeth as they are stronger.* The teeth may be backed with gold plate or platinum previously to the grinding. The end of the root towards the front should be cut away slightly *below the gum margin* in order to secure a close joint. This may be readily effected with a sharp round bur in the dental engine. Depress the back of the operating chair, and place the dental engine at the back of the chair. In this position the operator may stand at the back of the patient, the thumb and index finger may be placed, as guards, on the front and back of the root, while the right hand guides the bur in the hand piece and prevents the bur from wounding the gum.

The tooth, after being nicely fitted to the root end and face plate, is united to it with hard or adhesive wax. It is important to see that the outer surface of the tooth does not extend beyond the root end, otherwise this would form a shelf or shoulder for the accumulation of food, Fig. 3. The lower teeth are then brought against the upper ones, and if the articulation be found correct, the crown is then carefully removed and invested in plaster of Paris and sand for soldering. If the occlusion of the teeth admits of it, the palatal surface of the tooth may be built up with solder as shown by Fig. 4A, but if the bite is *very close* then very little solder can be used and the crown will have to be soldered as shown by Fig. 5. The face plate crown, the one, the construction of which, we have just described, is the most simple and easily made of any of these substitutes. To insert them we much prefer gutta percha to any of the phosphate cements, because, in the event of a fracture of the porcelain facing, it is next to impossible to remove the dowel from the root; whereas, if it be inserted with gutta purcha it is only necessary to heat the backing which remains. The heat softens the gutta percha in the root and the dowel is readily removed. To insert a crown with gutta percha we proceed as follows: The root is grooved with a wheel bur as shown by Fig. 6, the dowel is nicked, and the tooth is heated by passing it back and forth through the blaze of a spirit lamp or Bunsen burner; holding the tooth for this purpose within the beaks of a pair of straight forceps as shown by Fig. 7 B. When thus heated, gutta purcha, which had been previously softened over the hot water bath, is daubed over the dowel pin and built up

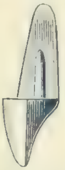

Fig. 3.

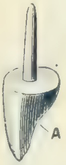

Fig. 4.

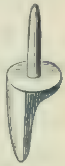

Fig. 5.

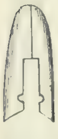

Fig. 6.

into a conical shape by means of a small spatula, as shown by Fig. 8 C. The dowel pin is now inserted in the root canal and pushed home by means of Fig. 9. Fig. 9 is merely a piece of solid brass rod mounted into a handle. It is permitted to get quite hot, and when the dowel is inserted into the root canal, the slotted end of Fig. 9 is applied to the cutting edge of the crown and used to force the crown into place. The heat which it maintains serves to keep the gutta percha quite soft until the crown is accurately seated.

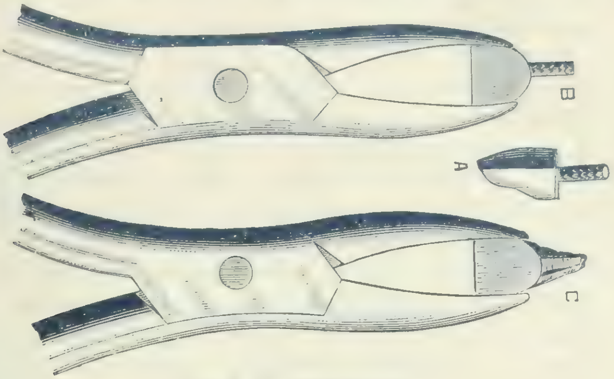

FIG. 7 B. and FIG. 8 C.

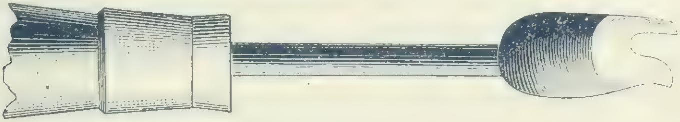

FIG. 9.

The construction of a face plate crown for *an upper first bicuspid* is practically exactly the same, only, for this tooth *two dowel pins* will be required instead of one as for any of the upper incisors, or for the lower incisors, cuspids or bicuspids. The preparation of the root of this tooth will require attention. As there is a slight divergence in the roots of these teeth it would be impossible to insert these dowels in the roots if this divergence were maintained, hence it becomes necessary to ream out roots in such a way that the dowels would assume a parallel position on the face plate, as shown by Fig. 10. The canals in the roots being divergent, as in Fig. 11, the fissure drill used to prepare the root canals, must cut the *buccal* canal *outwardly*, and the *palatal* canal *inwardly*, as shown by Fig. 12. The little face plate should receive the same attention

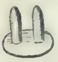

FIG. 10.

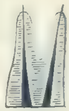

FIG. 11.

as the face plate for other roots: namely, the depressions at the points where each dowel enters the root canal in order to give lodgment for the solder which is to hold the two parts together.

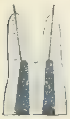

FIG. 12.

When the porcelain facing is backed and cemented in position, the inner part is manipulated with adhesive wax and formed into an approximation of the inner cusp of these teeth. The bite is taken while this wax is moderately soft, and when hard, it is carefully removed from the root. While in the hand it is still further manipulated so as to bring it into shape. A piece of thin platinum plate about one-eighth or three sixteenths of an inch wide and 35 or 38 gauge, is now bent around this wax, permitting the ends to extend beyond, and lie close against the porcelain facing, as shown by Fig. 13 A and B. This forms a little box or receptacle wherein the solder may be fused. In this condition the crown is invested, *dowels downward*. The adhesive wax is picked out, the crown gradually heated and then soldered. As the receptacle will take considerable solder, small pieces of scrap plate may be used to fill in, together with the solder. When cold, the crown is boiled in acid to dissolve the borax used in soldering and the platinum ground or filed away so as to leave a gold surface, or the platinum may be left at the option of the operator.

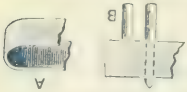

FIG. 13.

Face plate crowns may be used on any of the upper or lower teeth, but they are more applicable to the upper and lower bicuspids, as the force of mastication is more direct on these teeth, and there is less liability of the root splitting as in the other teeth where the pressure is not so direct. Molar roots, and even bicuspids, are preferably crowned with all gold crowns where the display of gold is not objectionable to the patient, as there is less liability to fracture as might be the case with a porcelain facing.

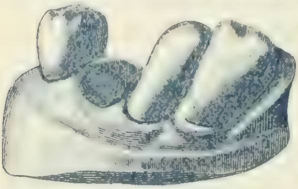

FIG 14.

Allied to these crowns may be considered, crowns mounted on roots considerably belled out, as is shown by the model Fig. 14. Some operators prefer to build these roots up level with the gūm margin with amalgam, making undercuts within the shell of the root and placing a small stick within the root before packing in the amalgam to serve as a hole for the dowel. We, too, have sometimes resorted to this, but we have found that the shell of the root is so thin that a sufficient depth cannot be given to the undercuts to insure the stability of the amalgam, without further weakening the root. In view of this we prefer to construct the crown as we will describe. Forming a small piece of wax into a small cone we pass it into the root and obtain a correct impression as shown by Fig. 15. A plaster model of this is made as shown by Fig. 16. A piece of paper is wrapped around this model and fusible alloy poured in, which gives a die exactly like the impression Fig. 15. Around this die a very thin lead pattern is formed as Fig. 17 This pattern is laid on a piece of thin platinum plate, 34 or 35 gauge, and the form scratched on it. It is then annealed and formed into a little funnel as shown by Fig. 18. The lapped ends are soldered. The little funnel is conveyed to the root, and a small piece of wire is passed into and through the small hole of the funnel to the end and solid part of the root as shown in Fig. 19. Before passing the wire through the funnel, a small drop of adhesive wax is dropped in. The wire dowel is heated, which causes it to adhere to the wax, when both parts may be removed from the root, invested and soldered. This being done, it is again carried to the root and a small collar of gold or platinum is bent around the fragile part of the palatal part of the root. The collar, funnel, dowel and porcelain crown are all united with adhesive wax, removed from the root, invested and soldered, and the completed crown is shown by Fig. 20. Such crowns, we think, are preferably inserted with phosphate cement. A few slight undercuts, high up on the more solid part of the root, being sufficient to retain them securely.

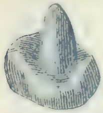
FIG. 15.

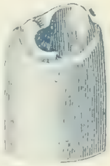
FIG. 16.

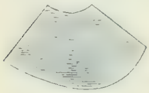
FIG. 17.

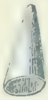
FIG. 18.

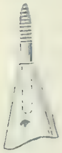
FIG. 19.

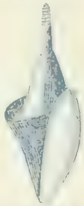
FIG. 20.

[TO BE CONTINUED.]

## PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS.

Reported by THEODORE F. CHUPEIN.

### BEHAVIOR OF AMALGAM.

It was stated by one of the members that he had found that sometimes amalgam behaved in such a way that he was unable to account for it. For instance, he had mixed the amalgam quite plastic, and at some future examination he had found it to have bulged considerably out of the cavity, while the same condition had been observed when the amalgam had been mixed quite dry.

Dr. Wm. Trueman said that the expansion and contraction of amalgam was controlled by two factors ; first the alloy, and second the manner of manipulation. His experiments in that direction were in accord with the observations of Dr. Flagg, in his work on plastic fillings. The higher the percentage of *silver* in an alloy (containing silver and tin only), *the less* the contraction; increasing the percentage of tin, increased this tendency, but, the proportion of mercury and the method of manipulation were also important considerations. He had seen hundreds of fillings made of alloy from Dr. William M. Hunter's formula(erroneously credited to Dr. Elisha Townsend),containing five to six parts of tin to four parts of silver, that after years of service showed no contraction, were of good color, and in every way satisfactory. He had found that to get the best result with a tin silver alloy, it was necessary to use it, as we say, very dry, that is, with no excess of mercury ; yet he found it advantageous to have an excess of mercury when making the mix, and afterwards expressing, through a chamois skin, the surplus, by pressure between the jaws of a vice. He preferred to pack this with a burnisher. In a condition to get the best result, amalgam thus prepared did not kindly permit building out or contouring ; the addition of sufficient mercury to make it plastic made it less desirable in other respects, nevertheless, a satisfactory compromise is readily effected by any one skilled in its use, so that this two metal alloy may be used as a good " all round " amalgam by an operator who prefers to use one kind only. The addition of one twentieth of *copper* to the silver, *controls* largely the *shrinkage*, and also gives the resulting amalgam a finer grain, and *hastens* the setting. It also permits it to be used in a more plastic condition. The addition of a small percentage of gold, not more than about three per cent. of the mass of alloy, seems to give it a better color and materially hastens the setting. It is quite possible to make an alloy that when amalgamated becomes, within ten minutes, so hard as to be quite unworkable ; it is not desirable, however.

Dr. Black's investigations are as yet incomplete, and he ventures to say that when they are complete and fully digested, while they will greatly add to our exact knowledge of these matters, they will not, as some writers predict, revolutionize practice either in regard to amalgam or any other department of the art. The only new discovery claimed, *the flow of amalgam*, is destined, he thought, to finally follow the way of the so-called "spheroidal tendency," so much talked of some years ago. So far as he could see, there is no unknown in the behavior of amalgam that this newly discovered property explains.

In making these remarks he did not wish to be understood as disparaging, in the slightest degree, the Herculean work and investigations of Dr. Black. He had read all that had been published with keen interest; all who have done so have doubtlessly noted, that at many points Dr. Black had discovered errors in his experiments, and that in every instance in correcting these errors he had brought his conclusions more in line with the conclusions of careful and observant operators.

Dr. Chupein said that Dr. Fletcher, of Warrington, England, had made considerable investigations with amalgams, and was regarded an authority on this subject; that he did not think favorably of any alloy composed solely of the two metals, silver and tin. Nor was he an advocate of surfeiting the alloy with mercury and of expressing the excess. He held to the idea of incorporating just the exact quantity of mercury with the filings of the alloy which he did by weighing and by shaking these together in a tube.

Dr. Trueman said that the best way of making the mix depended entirely upon the character of the alloy, and the condition which it was in. In a fine powder or fine shavings, an alloy that readily takes the mercury can be amalgamated in any way, and a homogeneous compound would result. With the alloy less minutely divided, or an alloy with but little affinity for mercury, forcible means must be used. Fletcher's method is a good one for some alloys, but not for all. Dr. Black seems to have got the best results so far as shrinkage is concerned by so making the mix that the particles are not thoroughly amalgamated, but simply surface coated and cemented together. There is, of course, less amalgam to change in such a case, but, he thought, such a filling in practical use would be apt to roughen and discolor, as it was not a homogeneous mass.

Dr. Topley thought that the best and only way to incorporate the mercury with the filings or shavings of the alloy was by hard rubbing with the pestle in the mortar. He did not think this could be so thoroughly accomplished by means of the finger in the palm of the hand.

## Bleaching Teeth.

Dr. Keyser spoke of bleaching teeth with 25 per cent. pyrozone, and evaporating the ether of the solution with heated air, thereby hastening the operation. He also spoke of his ability to stop the bleeding of a pulp through the pulp canal with this agent, as well as controlling the bleeding and weeping at the cervical borders of cavities situated below the gum margins, also, when inserting crowns on roots with the employment of this agent. It was a valuable cautery which cauterizes superficially and does not leave a burn or eschar which such agents as carbolic acid or trichloracetic acid do.

Dr. Chupein had used this agent successfully in the treatment of putrescent pulp canals. The large amount of oxygen it contained indicated its use. It is well known how all preparations of per oxide froth in the presence of blood and pus, and how this condition lasts as long as pus is present. He had used this agent in these cases and after two or three applications the frothing would cease, which led him to suppose that all septic matter had been destroyed by this powerful agent.

Dr. Charles Chupein spoke of the excellent results he had had in bleaching teeth with this agent. In one case the tooth was not only discolored by the septic matter infiltrating the dental tubuli, but the tooth had been stained by a large amalgam filling on the distal surface of an upper cuspid. After applying the dam he thoroughly removed all trace of the amalgam filling, reaming out the root canal also. Sealing the foramen he applied the agent, and after three applications the tooth was restored to its normal color. At one time the use of this agent was almost precluded by the frequent explosion of the tubes which were offered for sale, but the manufacturers now date each tube and specify, "This tube should not be opened after such or such a date." By this generous procedure not only the dentist is saved the expense, but is also saved, what is more, the risk of serious accident of minute pieces of glass wounding him in the face or eyes. A tube may now be had and placing this in a tumbler of ice and salt the pyrozone may be opened with little risk of explosion. Leaving it in the salt and ice until thoroughly chilled, it may be held with a towel steeped in ice water, while the neck of the tube is nicked with a corundum disk in the dental engine. This being done, the contents may be transferred to a small glass-stoppered bottle for convenient use.

Dr. Keyser stated that when his 25 per cent. pyrozone got pretty low he had added a little sulphuric ether to it without, apparently, interfering with its utility as a bleaching agent.

## CATAPHORESIS.

Dr. Trueman was not, as yet, favorably impressed by cataphoresis. He was disposed to think that there was a risk of injury by its use, as there is in the use of any medicament applied to the dental pulp. So far he had had no practical experience in its use, but had closely followed its presentation in the dental journals and had not formed of it a favorable opinion, and thought other, safer, and more simple means, would accomplish all that was desirable. He referred to the experience of Dr. Louis LeRoy, of New York, as narrated in the March number of the *Dental Cosmos*, page 233. This gentleman states that the pain produced by the electric current was decidedly unpleasant, the anæsthetic effect was not perfect, and ever since, about a month at the time he spoke, he had suffered severely from facial neuralgia, which he attributed to the use of this agent. He was impressed that the pulp was dying. It is to be noted, however, that the history of the tooth given by Dr. LeRoy is such that the result feared might have occurred had nothing been done. On this being suggested Dr. LeRoy replied, "I feel positive that it is really a poisoning of the pulp tissues through the forcing of cocaine or a medicament through the tubuli into the pulp. I do not hold the electricity entirely accountable; but the agent used, the cocaine."

Dr. H. E. Roberts held "A Talk on Cataphoresis," and had brought with him his outfit to illustrate his remarks. This was very compact, being not more than ten inches square. He had used it very successfully for sensitive dentin and for the treatment of external fistula, the result of Alveolar abscess. With it he was able to expose the end of the root without pain, and, with proper instruments, dissect the same. He had used it for bleaching in conjunction with 25 per cent. etherial pyrozone. But he had found the rapid evaporation of the ether so detrimental that he had been induced to add equal minims of water to the etherial solution. The water was *made* to take up the oxygen and thus more time was given to the bleaching properties of the oxygen. For bleaching teeth he used it in conjunction with the etherial solution and formed a 25 per cent. aqueous solution of pyrozone. This he made by adding an equal part of water to the etherial solution and evaporating the ether.

Dr. Chupein asked how did Dr. Roberts know that the added water combined with and held in solution the oxygen? Also what was the use of using Cataphoresis in conjunction with pyrozone if the pyrozone effected the object alone?

Dr. Roberts replied, "The evidence that the water combined, and held in solution, the oxygen of the etherial solution, was from the fact that if any of this aqueous solution got on the fingers it would produce the same pricking and cautery that was produced by the etherial solution: secondly, the object of using cataphoresis in conjunction with pyrozone for bleaching was to hasten the operation with possibly better results."

Questions were asked if the essayist had used it for anæsthesing and taking out nerves. Dr. Roberts replied that he had not yet used it for this purpose, not having had any case where such an operation was demanded.

Some of the members tried the effect, while Dr. Roberts increased the voltage gradually by means of the regulator. The sensation was reported excessively mild, not in any way disagreeable or painful, and having, when applied to the tongue, a slight acid taste.

Dr. Roberts reported that the obtunding effects were generally produced in ten or fifteen minutes, and that the effects had not been objected to by any one for whom he had applied it.

The cataphoric outfit used by Dr. Roberts has many marked advantages—is very compact, and of reasonable price. The apparatus is for sale by Messrs. Johnson & Lund. It is called "The Sphere Cataphoric Outfit."

## SELECTED ARTICLES.

### EUCAINE FOR PAINLESS EXTRACTIONS AND OTHER USES.

"I have been using lately for injecting in the gum for extracting teeth, the new anæsthetic called Eucaine, imported by Messrs. Schering and Glatz of New York. It is a preparation similar to cocaine without its dangerous qualities. It is practically safe. You can inject from a six to a ten per cent. solution with safety, and extract any number of teeth absolutely without pain. It seems to be a harmless remedy, and easily prepared. It will not deteriorate, but will keep for an indefinite length of time. It should be prepared with distilled water, and then brought to the boiling point afterward. It can be used many times to advantage in crowning or working around the gum tissue.

"I will give one illustration. I was putting a gold cap on a lower molar which had split on one side; the lingual surface had split off below the gum. The gum was ragged and bleeding and very sore, and in burnishing the crown to the root I hurt the patient considerably. I put a napkin in his mouth to keep it dry, and then took some of the Hydrochlorate of Eucaine and worked it around the bloody gum, and kept it there for about three or four minutes, and when I began again it seemed as if I were working on a piece of leather. There was no feeling whatever. I have not tried it in cavities as an obtunder, but I presume it will be as good, if not better than cocaine.

"Dr. McLaren: 'Are the effects the same as we sometimes get from cocaine, such as sloughing or swelling of the gums?'

"Dr. Watkins: 'The gums will perhaps swell the next day, but no soreness accompanies the swelling and no sloughing. The swelling will disappear, and there is no harm done. That can be avoided to a great extent, by rubbing the Eucaine out toward the place where the tooth was extracted, and by being careful to apply some antiseptic before inserting the needle.' "—*The Dental Cosmos*.

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## POISONS AND THEIR ANTIDOTES.

CHAS. W. GLASSINGTON, M.R.C.S., L.D.S., Edin.

I would draw your attention to an antidote case which has been kindly lent by Messrs. Burroughs, Wellcome & Co. This is of the utmost value to the general practitioner, and a dentist would not be wasting his money if he invested in one.

One of its contents is the stomach tube, which is now almost universally used in place of the old-fashioned stomach-pump. This acts as a syphon. The tube is passed down the esophagus till it reaches the stomach, the glass funnel is held well above the head, and water is poured in till the stomach is nearly full. If the tube be pinched while full of water, and the funnel placed in a basin below the level of the stomach, the contents of that organ will be removed. This performance may be repeated three or four times till the water comes back clear and free from smell.

The antidote case also contains a very valuable little book by Dr. Murrell, entitled "What to do in Cases of Poisoning." This is now in its eighth edition, which is quite sufficient proof of its great value.

Then there is a hypodermic syringe fitted with a cap and two needles, one straight, one curved, and a glass mortar and pestle for dissolving "tabloids."

Every possible antidote is put up, those for hypodermic use being in "tabloid" form. The case also contains a flexible catheter.

Then I would draw your attention to the dental hypodermic case, also by Burroughs, Wellcome & Co., the contents of which, though chiefly used for the hypodermic injection of either cocain or eucain, may be used in cases of emergency. Its contents are as follows:

1. Apomorphin. This, if used hypodermically, is one of the best emetics for cases of poisoning. For this purpose dissolve a "tabloid" in five minims of hot water, and inject into the upper arm. Its action is remarkably prompt, and there is no after depression as with antimony or ipecacuanha. Should you not have a hypodermic syringe, or one that will not work, place a "tabloid" under the tongue.

2. Caffein-sodio-salicylate. This is a restorative, and a "tabloid" can be dissolved and injected in the same manner, in cases of poisoning by morphin.

3. A hypodermic syringe with straight and curved needles. A very useful little article, the "lachrymal needle," has recently been added. This, though nothing to do with the present subject, will be found of great use to the dental surgeon for cleansing root canals at the back of the mouth.

By referring to the cards you will find all necessary directions mentioned for emergencies, but the following additional remarks may not be out of place:

*Aconit.*—With tincture of aconit always remember Fleming's tincture is five or six times as strong as that of the British Pharmacopeia.

*Ammonium.*—Never keep the bottles containing the aromatic spirits of ammonia and the strong solution of ammonia near each other. The latter has been given in mistake for the former. Remember, when diluting sal volatil it turns milky; the strong solution does not. Do not apply the strong solution to the nostrils as a restorative, as cases of fatal bronchitis have been set up by the careless use of this remedy.

*Arsenic.*—One is sometimes asked what should be done when this drug is used to devitalize a pulp, and some of it escapes on to the gum, and causes inflammation and sloughing of the surrounding parts. The local treatment would consist of warm, soothing applications with antiseptic mouth washes, such as boracic acid, twenty grains to one ounce of water.

*Carbolic Acid and Creosote.*—The sulfates of magnesium or sodium are given, as they form sulfo-carbolates, which are harmless. Should carbolic acid or creosote come in contact with the gum or cheek of your patient, apply olive oil freely.

*Cocain.*—Fatal cases from the use of this drug, when injected, are rare, but very alarming symptoms have been produced at times. The best remedy consists in the free administration of stimulants. Should the preliminary reports of eucain prove correct, this drug will, with advantage, entirely supersede cocain.

*The Mineral Acids.*—One of the chief things to be remembered in poisoning by these drugs is that the stomach tube should not be used, as it might cause perforation of the esophagus or stomach, if this has not already occurred.

*Nitrate of Silver.*—When applying this in the solid form to the back of the mouth, it should be fused on a piece of platinum wire. If the stick itself is used it is liable to break and drop down the patient's throat.

*Opium* —When used as a soothing mouth wash in the form of a fomentation of poppy heads, be careful to tell the patient not to swallow any. I was once called to a case where the patient had done this, but the prompt administration of an emetic of mustard and water, and insisting on the patient being moved about, soon remedied matters.

*Perchlorid of Mercury.*—Should inflammation of the gum occur from the injudicious local use of a too strong solution of this drug, the parts may be painted with tincture of aconit, or a twenty per cent. solution of cocain to relieve pain.

*Nitrous Oxid Gas.*—Before this is administered see that the patient has no tight clothing on, and that there are no artificial teeth, or any foreign body in the mouth. Have nitrit of amyl capsules at hand. Should you not possess a pair of tongue forceps, and you wish to draw the patient's tongue forward, use a pair of stump forceps. These remarks also apply to the administration of ether.

With regard to the administration of chloroform for tooth extraction, I hold very strong opinions, and consider it absolutely criminal to use it for this purpose. Whilst we have such a perfect and comparatively safe anesthetic as nitrous oxid gas, I fail to see why any one wants to use a dangerous one like chloroform. I might here point out that with all anesthetics, should any untoward result happen, the responsibility in most cases would rest with the administrator, not with the dentist.

With the help of the cards, I think I have spoken of most of the poisoning drugs used by dentists. Time will not permit me to go into their various symptoms, but whatever these might be, you cannot go far wrong, if you first follow the directions at the beginning and end of the card.

This will give you time to look round to see what the patient might possibly have taken, and also time to consider whether you can do anything further till medical help arrives.

The following hints may also come in useful:

Never give up a case as hopeless, and if it is one which requires artificial respiration, keep on at it till you are absolutely sure your efforts are unavailing.

Do not hesitate to send for professional help. Remember the old saying, "Two heads are better than one."

Do not leave your patient alone after recovery.

Collect all vomited matter, and put it in a safe place.

Take notes of the case as soon as you have time.

"Prevention is better than cure," therefore keep poisonous drugs in definite shaped bottles, or in definite places, so that you may know them by the touch and position, and when they require refilling, see that the right drug is put in its proper bottle. As an example, I once sent two bottles to the chemist to be refilled, one with peroxid of hydrogen, the other a twenty per cent. solution of carbolic acid. They came back properly labeled, but the chemist had put the peroxid into the bottle I had been accustomed to use as containing carbolic acid. Unaware of this I began using for a case of Rigg's disease what I thought was the peroxid, and was surprised to find no bubbling. My first idea was that the preparation was old, but I found out my mistake before any serious mischief had occurred.

Some may say this paper is unnecessary, as cases of poisoning in the dental surgery are rare. But a case might occur to any of us. A jocular friend of mine, who heard I was going to read this paper, said it ought to be a short one, and on my asking why, replied it could be summed up in one line, "Always keep your poisons locked."

This is good advice, but is almost impracticable in dental surgery.

I trust none of you will ever have occasion to refer to either the cards or antidotes; if so, and you are able to avert what might otherwise be fatal, then my efforts this evening will not have been in vain.

While the paper was being read, the following card, printed in a convenient form, was handed round.

### WHAT A DENTIST SHOULD DO IN CASES OF POISONING.

1. Send for medical assistance saying (if possible) what the patient has taken, or what has been administered.
2. If in doubt as to what poison has been taken, give an emetic of mustard and water, or a hypodermic injection of apomorphin.
3. Refer to the following:

*Poisons.* *Antidotes.*

ACONIT.

1. Stomach tube.
2. Emetics of mustard and water, sulfate of zinc, or apomorphin.
3. Stimulants.
4. Recumbent position.
5. Inhalation of nitrit of amyl.
6. Artificial respiration.

AMMONIA (*Strong solution of*).

1. Vinegar and water, lemon or orange juice, dilute acetic acid and water.
2. Demulcent drinks.

ARSENIC.

1. Stomach tube.
2. Emetics of mustard and water, or apomorphin.
3. Magnesia in large quantities or dialyzed iron (1 ounce).
4. Stimulants.

CARBOLIC ACID AND CREOSOTE.

1. Stomach tube.
2. Emetics of apomorphin or mustard and water.
3. Epsom salts or Glauber's salts ½ oz. in ½ pint of water.
4. Olive oil.
5. Inhalations of nitrit of amyl.

CAUSTIC POTASH AND CAUSTIC SODA.

1. Vinegar and water, lemon or orange juice.
2. Olive oil freely.
3. Demulcent drinks.

CHROMIC ACID.

1. Emetics.
2. Stomach tube.
3. Chalk and milk.
4. Demulcent drinks.

COCAIN.

1. Inhalations of nitrit of amyl.
2. Stimulants.
3. Hypodermic injection of ether.

COPPER (*Sulphate of*).

1. Stomach tube.
2. Emetics.
3. Milk and eggs *ad lib.*

ETHYL CHLORID.

1. Fresh air.
2. Stimulants.
3. Artificial respiration.

HYDROCHLORIC, NITRIC AND SULFURIC ACIDS.

1. Soap and water.
2. Any alkali.
3. Olive oil.
4. Milk and egg.
5. Hypodermic injection of morphin (stomach pump NOT to be used).

IODIN.

1. Stomach tube.
2. Emetics.
3. Starch and water.
4. Inhalations of nitrit of amyl.

NITRIT OF SILVER.

1. Common salt and water freely.
2. Emetics.
3. Demulcents.

NITRIT OF AMYL.

1. Fresh air.
2. Recumbent position.
3. Artificial respiration.

OPIUM.

1. Stomach tube.
2. Emetics.
3. Keep patient moving about.
4. Cold douches.
5. Inhalations of nitrit of amyl.
6. Artificial respiration.

Oxalic Acid.

1. Alkalies, such as chalk, lime or whiting.
2. Castor oil.

Perchlorid of Mercury.

1. Stomach tube.
2. Emetics.
3. White of egg (unboiled).
4. Stimulants.

### *Anesthetics.*

Nitrus Oxid Gas.

1. Pull the tongue forward.
2. Fresh air.
3. Nitrit of amyl.
4. Artificial respiration.

Ether.

Leave responsibility with anesthetist.

Chloroform.

Never allow it to be given for tooth extraction.

*If inhaled.*

1. Pull tongue forward.
2. Fresh air.
3. Slap chest and face with end of wet towel.
4. Artificial respiration.
5. Invert patient.
6. Nitrit of amyl.

*If swallowed.*

1. Stomach tube.
2. Emetics.
3. Nitrit of amyl.
4. Rouse patient.

### *Handy Emetics.*

1. Common Salt.

   One tablespoonful in half a pint of tepid water.

2. Mustard.

   Two tablespoonfuls in half a pint of tepid water.

3. Put finger in the throat or irritate fauces with a feather.

*British Journal.*

## TO PREVENT THE CLOUDING OF MOUTH MIRRORS.

In its issue of March 17, the *Medical Press and Circular* contains the following interesting and useful note: "A Boon to Laryngologists." Mr. George Wallis, L.D.S., Eng., has introduced a most ingenious device for preventing the clouding of mirrors used in dental practice. The method in question is simple in the extreme, and as effectual as it is advantageous. It consists merely in that of smearing a thin layer of ordinary soap, soft but not moist, over the surface of the mirror, and afterwards polishing the latter with a dry cloth. The effect of this procedure is that, however much the mirror may be breathed upon, its reflecting surface remains perfectly clear and bright. What a boon this ingenious method will prove to laryngologists! Indeed, its value cannot be too highly estimated. Under present circumstances, the only method of preventing the clouding of mirrors used in laryngology is that of heating them over the lamp. But frequently the electric light is used for illuminating purposes. and when this is the case it is necessary to have a spirit lamp at hand as the means for warming the mirror. The laryngologist, however, who prepares his laryngeal or rhinoscopic mirror after Mr. Wallis's method, will find that he will be able to dispense entirely with the hitherto necessary procedure of warming the instrument preparatory to introducing.

Mr. Wallis, who is the Dental Surgeon at the Central London Throat and Ear Hospital, gave a demonstration of his method at a meeting of his colleagues on the 12th inst.

The method is so simple and effective that we are sure it will be greatly appreciated by dentists in all parts of the world.—*C. A. & S.*

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## ALLOY AND CEMENT FOR FILLING.

Manatee, Fla., Feb. 9, 1896.

*To the Editor of the Dental Digest,*

DEAR DOCTOR:—In the January DIGEST is an article by C. W. Strang, entitled "Failures and Causes," wherein he advises a mixture of cement and amalgam for filling teeth, but cautions his readers that "it cannot be successful in the presence of moisture," by which I understood him to mean immediate exposure to the saliva after completing the filling. I use a method that is a great success in such immediate exposure to the buccal fluids; is much easier to perform; gives a much better color to surface of filling and to thin overhanging enamel; will wear better, and is as unshrinkable as the mixture Dr. Strang uses.

It is as follows: Procure good alloy and cement; mix the alloy as dry as will work well; press into a flat button, the thickness of a silver dime, for an ordinary cavity. Mix the cement so as to bring it to its stickiest condition; then, the cavity having been dried and kept so, fill with the cement, and quickly, before it begins to set, press onto it a plate of amalgam about the size of face of exposed cement. Press this plate into the cavity, allowing cement to escape slightly at all parts so far as practicable. With the ball end of very small burnishers perfect the union of amalgam to the edges of the cavity and then contour by the addition of necessary amalgam. Experience with this plan for over eleven years gives me such faith in it that I have not filled a single cavity with amalgam without the cement for five years past, and I believe the time will come when the use of amalgam without some such lining of the cavity will be considered malpractice.

This use of cement saves much discomfort to the patient from making undercuts or retaining points, also from thermal changes, and other advantages enumerated above. Yours truly,

W. E. DRISCOLL.

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## ARSENIC FOR SENSITIVE DENTIN.

### DR. REGISTER.

Sensitive dentin is the greatest bugbear to the profession. Nothing causes more severe strain and loss of nervous energy than to work on sensitive teeth. Anything to relieve that is a blessing to the laity and to our profession. Warm air and the application of a coagulant reduces sensitiveness. Carbolic acid, I believe, is our best coagulant, because it leaves no stain. To add to this partial success in destroying sensitiveness, I am using after a coagulant a one per cent. solution of arsenic. I know, when I speak of applying arsenic for the destruction of sensitive tissue, that I am treading on critical ground; but for several years I have been using Fowler's solution in very sensitive cases, first very rarely, only in extreme cases; then I grew bolder. My method is to first dry the dentin, apply carbolic acid, then apply Fowler's solution, or a solution of one per cent. arsenic. That is about what Fowler's solution contains—four grains to the ounce. I let that remain in the dentin for from one to five minutes, very rarely more than two minutes. When it is desirable to remove pigmentary deposits on the teeth, I bathe the parts with iodin. Some time ago Dr. Francis wrote an article on cleansing teeth, and I was strongly attracted to the efficiency of iodin for its cleansing influences. From that time I gave it much attention, and I find carbolized iodin destroys nearly all the accumulated matter on the teeth or in the cavities, at the same time annihilating all germ life. In regard to using this small amount of arsenic, I have not had one case in which I can trace a pulp being destroyed, or where even pulpitis has followed the application.—*Welsh's Monthly.*

## IS IT JUSTICE?

By A. B. Crawford, D.D.S , Grand Rapids, Wis.

Some six or seven years since a prominent local druggist said to me, "You dentists want to beware, or like ourselves, you will have more law than you want, and it will be constantly jumping up to pester you."

Is it not a fact that we have gone already, farther than justice would prompt? No doubt we have been honest in our endeavor to elevate the profession by requiring all new men who come into it to take a good collegiate course, but how about the many good men we have throughout the country who never saw the inside of a dental college, but still are real ornaments to our profession? They have worked hard and studied hard, and as near as is possible, they fill the full measure of good and successful dentists. Many of these men have been in practice longer than the lives of many of our recent graduates, and still with all their knowledge and skill, there are several States of this Union where it would not be lawful for them to practice, and there are several States where, in order for them to practice, they must pass a searching examining board and give acceptable answers on subjects with which they have not been called upon to familiarize themselves. Is not that going a little too far? Is it justice to these men? Would such a law stand before the Supreme Court of the United States? Is it not a fact, that in justice to all concerned, a man who is competent to practice dentistry or medicine or to do anything requiring skill, in one State of this Union should also be just as competent to do the same in any other State of the same Union? Would it lower our standard if the

National Board of Dental Examiners should recommend to all State Boards, that one who has practiced dentistry, say for ten years, should be accepted and allowed to practice where he pleases, subject, of course, to proper registration? Does any one believe for one moment that such action by State Boards would increase the number of quacks and shysters? Is it not a fact that the latter pest are generally graduates and can go where *they* please? Is it not a fact that very many reputable graduates see this matter in much the same light as I do? Let us all unite in a call for such legislation as will do absolute justice to the profession and the public.

The writer does not invite controversy upon these points. The aim is to establish principles which young and inexperienced operators may rely upon and thereby save time and losses in gaining such knowledge by years of practice.

Operative dentistry is a science notwithstanding the vital principles of progress are denied. The knowledge which has been gained from clinical observations seems to harmonize with the electro chemical theory. With this union, there is strength, sufficient to place operative dentistry upon a scientific foundation upon the vital plane. —*Ohio Dental Journal.*

## A QUICKLY MADE MATRIX FOR CEMENT. AMALGAM AND GUTTA PERCHA FILLING.

Cut a piece of thin German silver plate, such as is furnished for matrices, about $\frac{1}{8}$ of an inch wide, or narrower, and about $\frac{1}{2}$ inch larger than is necessary to encircle the bicuspid or molar tooth you may be about to fill. The rubber dam having been applied, the cavity prepared, and all things ready for the insertion of the filling, pass the strip of metal around the tooth, seizing the two ends with flat nose plyers, and draw it up close to the tooth, in the same way as you would do if you were making a band for regulating purposes. When closely fitted remove it and heat the ends and while hot place on one end a film of hard or adhesive wax. Now replace the band on the tooth, and by heating the noses of the flat plyers, the ends are again seized. The heat of the plyers melts the hard wax which was placed on the ends of the band matrix. The matrix is held with the plyers until the wax is thoroughly cold. When removed the matrix hugs the tooth closely and the wax is sufficiently tenacious to hold it in place until any of the above-named plastic fillings may be inserted.—THEODORE F. CHUPEIN.

## THE CHICAGO DENTAL SOCIETY.

Organized 1864.

Chicago, April 13th, 1897.

To the Dental Office and Laboratory:

I enclose the list of officers of The Chicago Dental Society for 1897 98, elected at the Annual Meeting, held in Columbus Memorial Building, Tuesday evening, April 6th, 1897:

| | |
|---|---|
| President, | A. H. Peck. |
| First Vice-President, | D. M. Gallie. |
| Second Vice-President, | G. T. Carpenter. |
| Recording Secretary, | E. Ma Whinney. |
| Corresponding Secretary, | Geo. B. Perry. |
| Treasurer, | E. D. Swain. |
| Member Board of Directors, | J. N. Crouse. |
| Board of Censors, | D. M. Cattell.<br>A. W. McCandless.<br>J. J. Whaley. |

Yours truly,

GEO. B. PERRY,

*Corresponding Secy.*

## UNIVERSITY OF BUFFALO DENTAL DEPARTMENT.

Editor Dental Office and Laboratory:

The Dental Department of the University of Buffalo held its fifth annual commencement exercises, in connection with the Departments of Medicine and Pharmacy, in Music Hall, Buffalo, on the evening of April 27th, when the Chancellor conferred upon the following named students the Degree of Doctor of Dental Surgery.

The whole number of students matriculated for the term was 222. The number of Seniors was 70. The Junior class numbered 70. The Freshmen numbered 82.

### Class in Dentistry.

Baker, Bertram John
Barnhart, Harry Eddy
Barraclough, Jarvis
Belding, Frederic Sherwood
Borton, Alfred Milton
Boyd, Warren Joseph
Brinton, William Penn
Cairnes, Alfred Byron

Cameron, Colin
Clark, Harry Moore
Cook, Alfred Rayson
Deuel, Charles Stephen
Dower, Jay Herbert
Faulkner, James Vernon
Flaherty, John Vosburgh
Freitag, Ferdinand John
Gough, Frank Arthur
Greene, Francis Leonard, Ph. B.
Greene, Frederick Dodge
Guile, Beverly Chew
Hamilton, Leverett Lorenzo
Head, George Tyler, M. D.
Hepp, Perry Frederick
Hickelton, George Taylor
Hipwell, Abram Lauder
Janes, Carey Elijah
Ketcham, Henry Hamilton
Lacy, Van Albert
Luetti, William Charles
Lord, George Thomas
Lyon, Harry Benjamin
Magee, Arthur Bastedo
Marks, William Hyde
McClure, Charles Jason
McFarlane, William Spence
McPhee, John Frederick
McPherson, Frank Chace
Merkley, Henry Stuart
Moss, William Drysdale
Moyer, Theodore Perkins
Muir, Robert
Niles, Frederic Bryant
Noble, Leonard Earl
O'Brien, Henry Richard
Paine, Seth Theodore
Payne, Charles Bicknell
Plumstead, Charles Henry
Potter, William Thomas
Rawson, Harry Pond
Rickards, Louis St. George
Rose, Wilbur Salathiel
Rowan, Samuel
Roys, Clarence Levi, Ph. B.
Sabine, Rolla
Simmonds, Daniel George
Smith, Frank Walton
Stone, Howard Eugene
Tanzer, John Marcus
Tefft, Harry Vedder
Thrane, Anna Mathilde
Underwood, Frank Hicks
Waldron, Clarence Renwood
Whitlock, Charles Henry
Whipple, Harry Lawson
Wright, Melrose Williams
Wood, Edward Arthur
Wood, George Daw

## NEW JERSEY STATE DENTAL SOCIETY.

The twenty-seventh annual meeting will be held in the Grand Atlantic Hotel, Atlantic City, commencing on Wednesday morning, July 21st, and continue in session two days; seventeen papers by eminent men will be read upon interesting topics pertaining to the profession. Clinics of every description have been provided; four large rooms on the ground floor available for exhibits, with 110 volt current for electrical exhibits.

Hotel rates, $2 50 per day up. Accommodations for 700 guests.

Friends from the West and East contemplating attending the A. D. A., will be able to attend this meeting and take the Old Dominion line of steamers from New York, Thursday, July 29th, 3 P. M., at an excursion rate of $11.20, or the Penn. R. R., rate of one and one-third fare.

CHARLES A. MEEKER, D.D.S., *Secy.*

Newark.

## CORRESPONDENCE.

We have received quite a long letter from Dr. I. A. Robinson, of Morrisville, Vt., which we cannot publish in full. The gist of the letter being that "Cocoa butter" is preferable to "vaselin" for lubricating disks and strips; and that the cost of "Eucaine" is less than "Cocaine."—ED.

## THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The fourteenth annual session will be held in the parlors of the "Hotel Chamberlin," Old Point Comfort, Va , Friday Morning, July 30th, 1897, ten o'clock, and continue in session (with the exception of Sunday, August 1st) until adjournment. Matters of the greatest importance to the Association will come before this meeting, and it is hoped every member of all the various State Boards will be present.

"Hotel Chamberlin" and "Hygeia Hotel" rates will be $2 50 per day, two in a room; $3.50 per day, one in a room.

Fare from all points on all the railroads will be one and a third; take your receipt from ticket agent when purchasing ticket. The Old Dominion Steamship Co., Pier 26, North River, New York, will sell excursion tickets, including meals and berth, for $11.20, sailing Thursday, July 29th, 3 p. m.

CHARLES A. MEEKER, D. D. S., Secretary,
29 Fulton Street, Newark, N. J.

## BOOK NOTICES.

CATCHING'S COMPENDIUM OF PRACTICAL DENTISTRY for 1896. The dentist's friend! He pays us a yearly visit and his call is so entertaining, so welcome, so instructive, that we would wish it were more frequently repeated.

To one engaged in dental journalism, the reception of this book only renews, pleasantly, the recollection of the many articles which one has read during the past year; not only this, but shorn of their verboseness it is presented like the delightful core of a cool, sweet watermelon, with the seeds and rind removed The book is eminently eclectic, and contains only what is most readable and most acceptable to the busy dentist. It contains many articles which may be read in an instant; and when one is in doubt, or needs a suggestion, or lacks an idea or wants a reminder, why, the price of the work ($3.00) is of no moment for the aid it gives.—ED.

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A PRACTICAL TREATISE ON MECHANICAL DENTISTRY by Joseph Richardson, M.D., D.D S., Late professor of the Principals of Presthetic Dentistry, in the Indiana Dental College, Etc., Etc.

*Seventh Edition*, revised, enlarged, and edited by George W. Warren, D.D.S , chief of the clinical staff, Pennsylvania College of Dental Surgery, Philadelphia. Author of "A Compend of Dental Pathology and Dental Medicine," and "A Compend of Dental Prothesis and Metallurgy."

With six hundred and ninety-one illustrations, many of which are from new and original drawings. Philadelphia, P. Blakiston, Son & Co., 1012 Walnut street, 1897.

*The Seventh Edition* of this popular and valuable work, devoted to Mechanical Dentistry, is before us for review. All that is valuable in this department of the Dental Art may be found in its pages. Among the valuable pieces noted in this edition, not found in the pages of the former publications of this work, are the following which has claimed the attention and the curiosity of the dentist, viz: The accurate swaging of a metal plate on the plaster cast by means of fine bird shot held within a receptacle. This process, known as "The Parker Swaging Device," is accurately described and illustrated on pages 176 and 177 of the work.

We note also the "Condit System," fully illustrated and described, included between pages 638 to 644. This system so admirably adapted as the means of curtailing the size of an artificial denture, and a practical suggestion for removable bridge work, whereby the gum is made to bear a part of the work of mastication, as well as to render the artificial substitutes more stable and immovable.

We next note the excellent method of Dr. Carr, described on pages 644 to 648, and termed "Dr. Carr's Method," where it is fully described and illustrated. This system, applicable wherever bridge work is indicated, is likewise a removable bridge work. It is a combination of metal and vulcanite work, where the strain or pressure on the gums is relieved by the minute springs placed within tubes set within the roots, which are likewise utilized by means of the headed screw to retain the denture accurately in place.

A full upper or lower denture may be firmly retained in place, by this system, with no undue pressure being exerted on the roots, or remaining teeth, as is the case in fixed bridge work, while a small "horse shoe" plate relieves the wearer of the discomfort of a plate covering the roof of the mouth. We regard the method very favorably and commend it to the attention of the profession.

We would likewise speak favorably of the system of "progressive dies," illustrated on page 169 of this work. The system practiced and described by Dr. I. N. Broomel of the Pennsylvania College of Dental Surgery, is an admirable manner of "coaxing up" a metal plate without in the least defacing it. It is particularly adapted to the swaging of aluminum plates, where from the softness of the metal it is apt to be marred or defaced by the horn hammer.

The work is particularly well gotten up as regards the typography, illustrations and quality of the paper. It is published, bound in cloth, for five dollars, which is a reasonable price for the information it gives, and the "up-to-date" character of the publication.—Ed.

## CORRECTION.

It has been called to our attention that we have failed to make the proper acknowledgments for several articles which we have derived from the *Dental Digest*. As we hold this to be, not only a matter of courtesy but a matter of true journalism, we cheerfully make the "amende honorable," and trust it may not occur again, either in favor of the *Dental Digest* or any other of our exchanges. Indeed, we are not positive whether the charge is to be laid at our door, or to the oversight of the printer, nevertheless we do not wish to shirk the responsibility. When Adam was charged with eating the forbidden fruit, he said, "Eve gave it to him;" and when Eve was taken to task, she said, "The serpent gave it to her." Thus it is we all seek to exonorate ourselves when charged with faults or shortcomings.

## THE PENN DENTAL JOURNAL.

This new journal is the organ of the University of Pennsylvania. It is published from the beginning to the end of the college year, viz: from November to May, inclusive. The first number of the first volume is before us, which is published by the under graduates of the Department of Dentistry of the University of Pennsylvania. Besides some articles of interest it contains some excellent "photo gravures" of the James Truman, Edwin T. Darby and Edward C. Kirk Dental Societies of the department, as also an engraving of the Dental Hall. We rather favor the publication of these journals, such as the *Stomatologist* and the *Penn Journal*, connected with the colleges, as they are the initial steps for students to express their views, enabling them in after life to contribute to the literature of their profession. We wish the new venture every success.—Ed.

## THE PRACTICAL PLACE.

### To Toughen Plaster Casts.

Plaster casts may be made so tough that they will bear the driving of a nail into them without cracking, by immersing them in a hot solution of glue for a sufficient time to permit its permeating the entire mass.—*Scientific American.*

### Cement for Setting Crowns.

A saturated solution of sulfate of zinc, used with the powder of oxiclorid cement, is recommended for this purpose, as it becomes very hard.—*Headlight.*

### Cementing on Crowns.

Having root and crown ready, warm the crown and apply a thin coating of chloro percha to the post. Adjust the crown immediately to the root, thus shaping the gutta percha on the post as the chloroform evaporates. Remove, and when cool cement as though no gutta percha had been applied. The crown is easily removed at any time by heating the crown, softening the sheath of gutta percha around the post.—*Geo. Evans.*

### To Grind Down Teeth Painlessly.

Where teeth are sensitive and require considerable grinding, as for crowns and bridges, apply chloride of ethyl. After its use you can cut teeth all to pieces. By holding it a little distance from and spraying it on the tooth you can take a sharp stone and cut without causing pain, and I have found very little sensitiveness afterward.—*Dr. Platt, Stom. Gazette.*

### To Remove Remnants of Pulp.

Dr. C. N. Peirce advocates trichloracetic acid forced into canals to destroy any remnants of pulp.

### To Keep the Hands Clean.

In the warm days that are now before us, when a rubber glove can not be worn with comfort while engaged in prosthetic work, an ointment of honey for the hands will subserve the same purpose. It holds the dirt in suspension and dissolves very quickly when immersed in water, leaving the hands soft and clean. Take clarified honey and rose-water, of each one pint, Listerine two ounces. Mix and bottle. For winter use add two or three ounces of glycerine.—*The Dental Digest.*

### How to Transfer Pictures.

The liquid to be used is made by dissolving 1½ drachms common yellow soap in one pint of hot water, adding, when nearly cold, 3¼ fluid ounces spirits turpentine, and shaking thoroughly together. This fluid is applied liberally to the surface of the printed matter with a soft brush or sponge (being careful not to smear the ink, which soon becomes softened) and allowed to soak for a few minutes; then well damp the plain paper on which the transfer is to be made, place it on the engraving and subject the whole to moderate pressure for about one minute. On separating them a reversed transfer will be found on the paper.—*National Educator.*

### Gutta Percha Fillings.

Secure sufficient separation, and prepare the cavity as carefully as if for a gold filling—no retaining points necessary. Touch the cavity walls with copal-ether, varnish, and allow a few moments for evaporation. The sticky surface assists in holding the first pieces of gutta percha in position. Use gutta percha of good quality, and be cautious not to overheat. Pack with a warm instrument; and when completed, hold a cold burnisher against the surface to cool. Trim and finish as thoroughly as though gold. When not exposed to attrition or wearing mastication this work gives marvelous results.—*I. L. Davenport.*

### IMPRESSION FOR PORCELAIN INLAY.

Stiff modeling compound of gutta percha is preferable to plaster for cavities reaching to or under the gum, as it is difficult to see the edge of the inlay at this point, but the stiff compound pushes the gum away in taking the impression.—*L. E. Custer, Mississippi Valley Dental Association.*

### IODIN AS AN OBTUNDENT.

Dr. Register says: Applications of the dilute tincture are freely made to teeth and gums, which not only constringe puffy gums, drawing them away from about the teeth, but clearly outline any deposits which may be present. Deposits are defined by this means, which without it would entirely escape detection. The patient expresses gratification, not annoyance, at its sensation. The iodin appears to have the power of loosening the deposits on the teeth. It insinuates itself into the minute recesses of rough areas of the crowns. The iodin is followed by applications of ammonia, which is immediately decomposed, a colorless solution formed, and the teeth are found to be much lighter in color. The surfaces are subsequently cleansed and polished by means of buffs and fine pumice.—*International.*

### BAD BREATH.

As a rule, bad breath arises from a disordered stomach; and in such cases, when once the bowels have been regulated by a course of mild aperients, the trouble will vanish. It may, however, be caused by decaying teeth, or by neglect of the teeth altogether.

### TAKING IMPRESSIONS.

In taking an impression for partial upper or lower, with composition, I find I get perfect impressions as follows: Take the impression the usual way and have a pan of hot water near, after taking an impression from the mouth hard, then dip it in the pan of hot water so as to soften the surface, place it back in the mouth, and where the impression was faulty at first, the second time it fully adapts itself to all portions of the teeth and ridge and palate.—*C. C. McCloud.*

### PULP PROTECTION.

If a little iodoform and glycerol is placed over a nearly exposed pulp and covered with asbestos paper, that again being covered with oxiphosphate, a gold filling can be inserted without danger of pulp irritation. The idea is Dr. Will Taft's, and bears the test of actual practice.—*H. J. McKellops.*

### IMPRESSION MATERIALS.

Dr. W. H. Steele, of Forest City, Ia., does not believe plaster to be the ideal impression material for full cases. He takes first an impression in plaster, removes and dries off thoroughly, scrapes sufficiently to remove the roughness, then moulds over it a thin sheet of modelling compound and inserts in mouth when compound is quite soft, cooling with a syringe of cold water. By this means a model is obtained which needs no scraping to make the plate fit.

### ELECTROZONE AND COCAIN IN CATAPHORESIS.

The combination of fifteen per cent. of cocain in electrozone makes the preparation that we are after. The first result of mixing them together is that the solution turns a creamy white color for a moment, then turns to a deep yellow. What it is I do not know, but the effect of the preparation—and I have used it right alongside of other preparations—is remarkable.—*Dr. Brown, International.*

### PULP DEVITALIZATION WITH COCAIN.

Put ten grains muriate of cocain in a test tube, add one dram distilled water and bring to a boil; cool and place in a vial for use.

Secure rubber dam on tooth so that none of the solution will enter the mouth or reach the gum. With syringe place one or two drops in the cavity to numb the pulp (or touch the exposed pulp with a 95 per cent. solution of carbolic acid).

Enter the pulp with the needle, inject the solution, pushing the needle further into the pulp as fast as sensation is lost. At the end of from three to five minutes a hook broach can be carried to the end of pulp canal and turned around, amputating the pulp.

### ARSENICAL APPLICATIONS

In lymphatic patients, the application may be made directly to the pulp, and the operation will be painless. In patients of the nervous temperament, a similar application will be exceedingly painful, and the arsenic should be placed in the dentine as far as possible from the pulp. It all depends on the temperament of the patient, which should be noted in every case.—*J. Foster Flagg.*

THE
Dental Office and Laboratory.
FOURTH SERIES.

VOL. XI. PHILADELPHIA, SEPTEMBER, 1897. No. 5

# THE CONSTRUCTION OF CROWN AND BRIDGE WORK.

BY THEODORE F. CHUPEIN, D.D.S., Philadelphia, Pa.

[SECOND PAPER.]

In our last paper we went over very thoroughly, we think, the construction of the "*face plate crowns*," the simplest form of crown to construct. We will now advance to the next, more difficult, the "*collar crown.*"

The preparation of the root for these cases, as far as their antiseptic treatment is concerned, is exactly the same; the face of the root, however, is prepared differently. Collar crowns are only inserted where there is a sufficient portion of the palatal part of the root left standing to enable the operator to fit a collar around this part of the root. This condition is shown by Fig. 21.

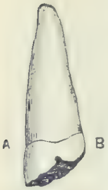


FIG. 21.

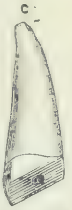


FIG. 23.

This shows the root with the labial and palatal parts remaining: A the *palatal*, B the *labial*. The face of the root is not ground with stump corundum wheels, as in cases for face plate crowns; but "facers" are used in the dental engine, so as to obtain a level surface to the face of the root. These facers are represented by Fig. 22. The action of these instruments on the face of the root is to cut it level, as shown by Fig. 23. In using these facers, it is well to keep the root dry, by folding a napkin and placing it on the outer gum, beneath the lips and around as far as the bicuspids, folding it on the gum of the palatine surface, and holding it in place with the fingers of the left hand, while the right hand directs the instrument in the dental engine. If the root is not kept dry the teeth of the facers get clogged, and do not cut. The projecting point of the facer is inserted into the opening of the root canal, to prevent the instrument slipping while it revolves, and enabling the operator to give any angle or slope to the root best suited to the case. The palatal part of the root A Fig. 21 need not be touched. It need not, however, be left as prominent as it is represented in the engraving, but should be cut down until it is about one-sixteenth of an inch higher than the gum margin, so as to leave sufficient space for the thickness of the face plate. This is best regulated by directing the patient to close the teeth, when it will be seen if the face of the root is free from occlusion with the lower teeth, sufficiently to admit the thickness of the face plate.

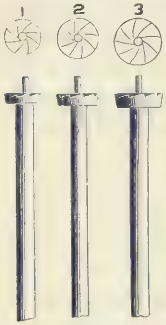


FIG. 22.

So much of the operation having been accomplished, the next is to fit the collar. Various suggestions have been proposed to do this, but the plan we are more partial to is represented by Fig. 24. A piece of 22 K. gold 30 gauge, and shaped like A Fig. 24, is annealed, and being bent around the handle of an excavator first, is then transferred to the root, the wider part, or that part marked with "a cross" resting on the palatal part of the root. The ends are seized with a pair of flat nose pliers and drawn tightly around the root, observing that the sides of this band pass well beneath the gum next the two adjoining teeth, as shown by B Fig. 24. The band being thus roughly fitted is removed, and the wide or collar part is contoured with the contouring pliers, as shown by C Fig. 24. Replaced on the root it is made to fit perfectly by holding the ends with the flat nose pliers in the left hand, while a burnisher, used in the right hand, forces the soft metal into every inequality. In this condition it is carefully lifted off the root and heated red hot. This heating changes the molecules of the metal so that the ends, which were held in the pliers, will not spring away from each other, which they would have done had heat not been applied, when released by the pliers. The band is then laid on a piece of 22 K. gold, 30 gauge, as shown at D Fig. 24, when it is soldered. If the fitting be accurate, as it should be, the minutest particle of

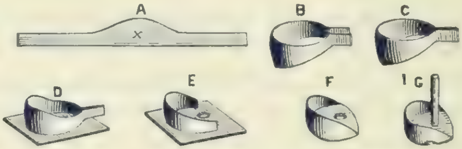


FIG. 24.

solder will be sufficient to unite this plate to the band. The ends of the band are now filed off, as shown at E Fig. 24, and after this the surplus of the plate cut off as shown at F Fig. 24. The root canal having been prepared for the dowel, and the dowel fitted, the collar and face plate, F Fig. 24, are placed on the root, and the entrance to the root canal indicated by forcing a burnisher against the face plate in the vicinity of the hole. This makes a depression and shows where the face plate is to be pierced to allow the dowel to pass through. Before proceeding farther it is well to again remove the collar and face plate, and with a round bur about the size of the one shown at Fig. 25, countersink the mouth of the opening into the root canal. The face plate and collar are again applied to the root, and a larger burnisher pressed on the face plate so as to force this into the countersink. The object of this is to afford lodgment for the solder which is to unite the dowel pin to the face plate. If this provision be not made, when the protruding end of the dowel pin is cut off, there would be so little solder holding the two, that this part of the crown would be very weak. In reference to the size of the bur used for forming this countersink, this will have to be determined by the size of the hole in the root canal.

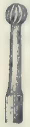


Fig. 25.

These preliminaries having been observed, the hole or puncture made in the face plate is enlarged and the dowel passed through. This is held in place by adhesive wax. The dowel, collar and face plate are then removed from the root, invested and the dowel soldered.

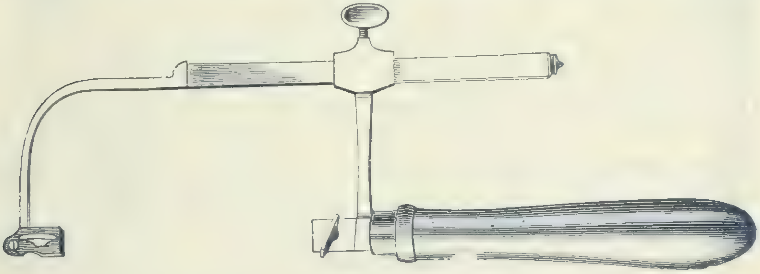


Fig. 26.

This being accomplished the procedure is shown at G Fig. 24. The protruding end of the dowel may now be cut off close to the face plate, and the tooth of replacement ground and fitted. We have found it best to back the tooth *first* before grinding. The rivets may be split by means of a very fine saw in the mechanical saw frame, Fig. 26, when they may be bent over against the backing with a knife blade, or better with an instrument like Fig. 27.

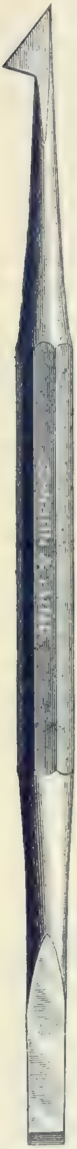
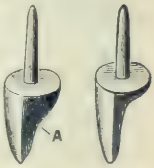


FIG. 27.

It is well before fitting the tooth to the root to cut away a little of the labial aspect of the root, so that the gum may slightly lay over or overlap the tooth of replacement. This may be done without in the least wounding the gum, by depressing the operating chair, placing the dental engine at the back of the chair, so that the operator stands over the patient. With the finger and thumb of the left hand placed on the inside and outside of the root, and a sharp new bur in the handpiece of the dental engine, held in the right hand *close to the nozzle*, there will not be the least chance of the bur slipping and wounding the gum.

The tooth being fitted and aligned, it is united to the face plate and dowel with adhesive wax. The teeth are brought together so as to see that the articulation is all right, when it is removed from the root, invested and soldered. The amount of solder used to unite the tooth to the face plate will be governed by the closeness or length of the bite, as shown by the cuts Fig. 4 and 5 of the first paper, July No. 1897, reproduced here as Fig. A and B.



A B

It sometimes happens that an otherwise good root which is applicable for a collar crown is so much bellied out towards its labial aspect that it cannot be made level with facers. Such a case is shown at Fig. 28. If we make a collar and face plate, as we have described, and proceed with it up to the point represented at F Fig. 24, and then place this on a root like Fig. 28, we would find that there is considerable space between the under side of the face plate and the concavity of the root face. If we attempt to lessen this space, and try to make it fit by forcing a burnisher against the face plate, so as to drive the face plate into this concavity, the force thus used would throw the sides of the collar outward towards the adjoining teeth, as shown at Fig. 29. If we attempt to bend the sides in again so as to make these fit against the sides of the root, the face plate would be again flattened and the space would again exist.

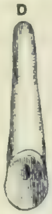


FIG. 28.

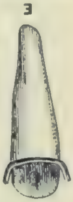


FIG. 29.

In such a case we form the collar as already described, then we cut a face plate like that shown at Fig. 30. The little tick is soldered to the collar, as shown at Fig. 31. The collar is placed on the root and held there firmly, while the face plate is pressed or burnished into the concavity. In this way the face plate and collar are made to fit perfectly. In filing off the protruding ends of the collar, as shown at E Fig. 24, the collar should not extend more than three-quarters around the root, probably somewhat less.

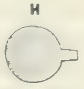


FIG. 30.

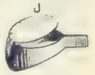


FIG. 31.

This style of crown possesses considerable strength, and has the advantage of showing no gold on the outside, which is often objected to. As the lower front teeth close against the palatal surfaces of the upper front ones the collar resists, in a great measure, the strain, and prevents the dowel from being bent, although even in these crowns we have sometimes found this to have occurred when quite a heavy dowel had been used.

These crowns are infinitely more troublesome to make than face plate crowns. The fitting of the collar, face plate and dowel require considerable patience, care and nice adaptation.

Another plan for fitting these collars has been suggested by Prof. W. F. Litch, which we give here because it may be more acceptable than the one we have suggested.

The root having been prepared, as illustrated by Fig. 23, a piece of gold or platinum about 32 gauge is cut into shape, as shown by Fig. 32, and accurately fitted to the palatal part of the root by burnishers. It is either contoured into shape with contouring pliers, or it may be "nicked" with a pair of small scissors, as shown by the black marks on the engraving. The next step will be the preparation of the face plate and dowel pin. A piece of gold or platinum 32 gauge, the width of the root and about 3-16 of an inch larger is placed on the root and perforated to permit the dowel to pass into the prepared root canal. The excess in length of this face plate is permitted to extend over the palatal surface. The dowel is removed, and if the pin was forced through the face plate, the pin will bind against the face plate sufficiently to permit both to be removed. A minute bit of solder will unite these. If, however, the hole in the face plate is a trifle too large for the dowel, the two will have to be united with adhesive wax, invested and soldered. This trouble, however, may be avoided by making the hole in

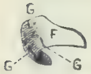


FIG. 32.

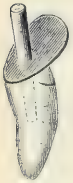


Fig. 33.

the face plate small and then forcing the dowel through. When the dowel is soldered to the face plate, it is replaced on the root in the mouth and by means of a plugger it is closely adapted to the face of the root. Looking at this sidewise it presents the appearance as shown by Fig. 33. The part extending over the palatal part of the root is now nicked with small scissors, and one after another the nicked parts are bent over the root by means of a plugger, as shown by Fig. 34. The collar, Fig. 32, is now coated with a thin film of Parr's adhesive wax or flux wax on the outside, and placed in position. The face plate and dowel are put on the root and a warmed instrument pressed against the nicked parts. This melts the film of wax on the collar and causes the face plate to adhere to the collar. The dowel, face plate and collar may now be removed from the root, invested and soldered.

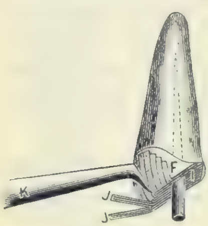


Fig. 34.

The collar, face plate and dowel having been thus constructed, the mounting of the tooth on these is the same as has been described, when these have been constructed by the other plan.

Another plan of constructing a collar crown is suggested by the *Hovestadt system*, which we will have occasion to allude to when we take up the subject of Ferrule or Richmond crowns.

To utilize this system for a collar crown the root is ground flat or even with the gum, and is made level with facers. A trephine, such as is shown by Fig. 35, is selected from the outfit to suit the case in hand. It should be just large enough to fit over the smallest diameter of the root. It may be used by hand, which we think preferable, or it may be used in the dental engine. The root being made circular by the trephine, a cap, corresponding in number to the trephine used is selected and placed over the face of the root thus prepared. The dowel having been fitted to the root is forced through the cap (after this has been pierced), when the two are soldered, as shown by Fig. 36. The front part of the cap is filed off, as shown by Fig. 37, when we desire to use a collar crown instead of a ferrule crown. A great deal of laborious work is saved by this sys-

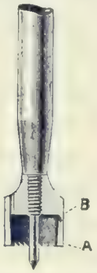


Fig. 35.

tem of crowning. When the face plate, collar and dowel are made and fitted, as thus described, it is well to cut the least part of the face plate of the cap, so that the porcelain facing may be nicely fitted against the root, as shown by Fig. 38. It is also well to trim down the root in front, just in advance of the face plate, as shown by A Fig. 38, so that the gum may slightly overlap the porcelain facing.

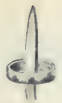


Fig. 36.

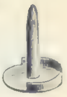


Fig. 37.

It will often be found troublesome to obtain a sufficient depth for the dowel. The dowel should not be less than *a quarter of an inch* in length, but in the roots of central incisors and cuspids they should be *longer*. This length may do for lateral incisors, and a lesser length is admissible in bicuspids when two dowels are used. The way we proceed in this matter is as follows: We provide ourself with *a stiff but fine* probe; a probe very fine at the end yet of sufficient rigidity to enable the operator to search for the canal, and to clean away the debris as it accumulates from the reamers. The attenuation of the probe should not be for a greater length than one-half an inch from the end, and the entire length of the probe, handle and all, should not be more than four inches. After the first entrance is made into the root canal, with Maury or Gates Glidden reamers, search is made for the canal with the probe. When found, notice is made of the direction which this indicates as it enters the canal. A small reamer may now be introduced into the canal, and the canal reamed out to *its entire depth* with this small reamer. This *may* be possible, but should it not be, the reamer is to be withdrawn frequently and the debris cleaned away with the probe. The small reamer is still used until the apex of the root is reached. A reamer *a size larger* is next used, and the canal thus increased in size by larger and larger reamers, until it is of a size proper for the crown that is to be inserted. When the reamers fail to clear themselves, it is best to stop their use, and clear away the debris, rather than to attempt to force the reamer through this, as frequently this debris gets packed into the canal so hard as to divert the reamer or drill from its true course, making a change of direction and resulting in the perforation of the root, and this frequently before sufficient depth is attained for the dowel.

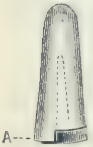


Fig. 38.

[THIRTIETH PAPER.]

# LEADING QUESTIONS AND ANSWERS FOR DENTAL STUDENTS.

By Theodore F. Chupein, D.D.S., Philadelphia, Pa.

## Characteristics of the Lips.

Q. What may be said of the characteristics of the lips?

A. Their characteristics are more General than Local.

Q. What is noticeable in these in different constitutions?

A. The lips vary in character, some being thick, while others are thin, red, rosy or pale.

Q. To what is this due?

A. This is due to the temperament of the individual or to the quality of the blood which circulates in the blood vessels which supply them.

Q. Do the lips indicate anything about the individual?

A. Yes; lips of a pale rose color indicate good health, pure blood and a good constitution.

Q. What is the indication of red lips?

A. These indicate a sanguine-serous condition of the blood which circulates through them.

Q. What are the indications, in the lips, of the lymphatic temperament?

A. In this temperament the lips are generally soft, flabby, pale, thick and pouting, indicating a lack of blood in these parts.

Q. How may we read in the person a firm, pushing, courageous disposition?

A. These qualities are indicated by a normal supply of blood to the lips, giving them a rosy tint; the flesh is firm, and the lips are thin and the features are clearly cut and well defined.

Q. What are the reasons for paleness or redness in the lips?

A. Paleness indicates the lack of red blood corpuscles, and redness the superabundance of these in the blood.

Q. Are these characteristics reliable diagnostics at all times of life?

A. It is asserted by Laforgue that at the age of six years these general characteristics cannot be distinguished, yet the lips as well as the flesh of the child indicate the quality of the blood, and therefore proclaim health or disease, or the approach of asthenic and adynamic disorders.

Q. What do you mean by asthenic or adynamic disorders?

A. Both words indicate a lack of strength, a debility and absence of vital force.

Q. Is the blood of children as strong as the blood of adults?

A. No; it is generally more watery.

Q. What occurs when the blood of the child is normal?

A. The child grows without disease; but if the blood be abnormal in its constituents, the growth of the child is arrested, is irregular and the activity of childhood is interfered with; it becomes listless, quiet and inactive.

Q. What produces this abnormal condition of the blood?

A. It is produced by the imperfect assimilation of the nutritive particles of the food; consequently the blood is poor in quality.

Q. What do you mean by assimilation?

A. It is the process of transforming the food into such a condition that it is converted into blood and taken up by the circulatory system, thereby becoming an integral part of the economy. When speaking of "mental assimilation" we suppose that the ideas expressed by a speaker are not taken in or understood by the listeners, hence the mental impression becomes confused or imperfect.

Q. Are there any other indications about the lips?

A. Yes, a secretion of the lips has been observed and carries important diagnostic and prognostic importance.

Q. What is meant by Diagnosis and Prognosis?

A. "Diagnosis" means the interpretation of disease by certain symptoms, signs or indications. "Prognosis" the science of foretelling the progress and termination of any disease by certain symptoms or indications.

Q. Can you mention some of these symptoms or indications?

A. When the lips are dry this points to fever, or may be an indication of spasms. When coated with a white mucus this is a sign of irritation, probably of inflammation of the intestines, or it may mean gastric fever; this mucous coating of the lips sometimes precedes a paroxysm in gout. When the mucous secretion or deposit is dry and brown this is an indication of the breaking down of an organ recognized by watery excretions tending to typhus affections. This brown deposit on the lips enables us to diagnose typhus and putrid fevers, also eruptions of all kinds such as small-pox, measles, scarlet fever.

Q. Is there any difference between typhus and typhoid fevers?

A. There is a resemblance but a decided difference between the two. Typhus fever is known also as jail-fever or ship-fever. It is an acute, specific, epidemic, contagious and eruptive fever, doubtlessly due to an infecting germ. It is recognized by a red depressed pimple on the body like a flea bite. The sufferer remains insensible to all surroundings, the brain being affected. It terminates by a crisis favorable or unfavorable—more frequently the latter—on or about the fourteenth day. Typhoid fever is an acute continued fever induced by germs taken into the system through the alimentary canal and largely affecting the intestinal tract. The spine becomes very painful and there are rose-colored spots on the skin. Delirium, headache and continued hallucinations run through its course. Diarrhœa occurs but sometimes the feces collect in the rectum and fail to be discharged. A bleeding of the nose is one of the early indications. The disease generally lasts about four weeks, but sometimes it ends in eight or fourteen days. It is not considered contagious.

Q. Are the lips considered as good an indication of disease as other parts of the mouth?

A. They are not, yet their indications are often quite as reliable.

## Characteristics of the Tongue.

Q. What is the tongue?

A. It is the muscular organ which lies in the lower part of the mouth and is perhaps an organ possessing the most varied offices of any single one of the economy. Thus it is the chief organ of taste; it assists in mastication, in salivation and deglutition by manipulating the bolus of food in the mouth; it is the main organ of speech, forming, by its varied movements and flexibility, the innumerable words of language; it is composed of a great variety of parts, and is the index by which the physician makes his diagnosis in cases of sickness.

Q. What is believed to be the effects produced by disease on the mucous membrane of the tongue?

A. It is believed that the condition or indications shown on the tongue are analogous to those produced on the integuments near to or remote from that organ. The color of the tongue, its consistence, humidity and temperature similar to the skin as well as the other integuments.

Q. But do not the indications of the tongue vary according to the temperament of the individual?

A. They do, so that the physician should acquaint himself with the appearance of the tongue in health in the various temperaments of different individuals, so as to be able to read their indications in disease. In some individuals the tongue is dry, in some it is furred, in still others it is clean, in still others it is moist or watery, and yet in others it is red, and in others, still pale, showing a great diversity of conditions.

Q. How have these varied conditions of the tongue been divided?

A. Prof. Schill divides them into objective and subjective indications: The changes of size, form, consistence, color, temperature and secretion belonging to its objective attributes, while the sensation of taste belongs to the subjective.

Q. Can you enumerate the pathognomonic signs of the tongue?

A. Hypertrophy, inflammation or conjestion occasion its enlargement, but when the tongue enlarges from inflammation this points to acute disease, sore throat, inflammation of the lungs, measles, plague; variola, all of which give unfavorable prognosis. If the swelling or enlargement of the tongue be from the effect of mercury or of abuse in the taking of spirituous liquors, of gastric inflammation, of chlorosis (the green sickness or early morning sickness of pregnant females), of syphilis, of hysteria or epilepsy the prognosis is not unfavorable. When the tongue swells from any of these causes the disease is always slower and more tedious than when it does not.

Q. Does the tongue enlarge from any other cause?

A. Yes, from cancer.

Q. Does the tongue ever get smaller?

A. Yes. When the patient is emaciated the tongue partakes in the general falling away, in which case it is soft and movable. When the tongue becomes small and is hard and pointed the prognosis is unfavorable. This condition usually points to typhus fever, cholera, inflammation of the lungs, and in brain trouble. When the tongue shrinks in size as in hysteria or epilepsy the diminution in size carries no unfavorable import.

Q. Do any other diseases produce changes of form in the tongue?

A. Sometimes chronic dyspepsia and acute exanthemata produce enlargement of the papilla of the tongue. When dyspepsia is protracted the edges of the tongue crack, and it is elongated in paralysis and epilepsy.

Q. What do you mean by exanthemata?

A. It means all such eruptive diseases which are accompanied with fever, such as small-pox, measles, chicken-pox, scarlatina, etc., which diseases generally interrupt the nutrition of the teeth and may cause their faulty formations, or cause pits, depressions and blemishes on the teeth, and which may also cause a necrosis of the bones.

Q. What do you mean by the papillæ of the tongue?

A. The papillæ of the tongue are those roundish elevations noticed on the back part of this organ towards its root or near the uvula.

Q. What is the uvula?

A. It is the little roundish membrane hanging from the edge of the palate at the entrance of the fauces.

Q. What are other indications of the tongue?

A. A soft tongue may be regarded as a favorable indication in acute diseases; when the tongue is flaccid, that is, soft and limber, it is a sign of debility.

Q. What do you mean by acute diseases?

A. An acute disease is regarded as one having a rapid and severe progress and termination. When the tongue is moist it may be regarded as a favorable sign. When it is dry, this is a sign of inflammation and irritation particularly of the intestines or lungs. A dryness of the tongue is also in diarrhœa, typhus fever, pneumonia, gangrene of the lungs, pleuritis, peritonitis, enteritis, catarrhus, gastritis, inflammation of the joints. When these different degrees of dryness occur a roughness, a fissured, or a burnt tongue is noticed, and these conditions furnish unfavorable indications when they are not accompanied with thirst.

Q. You used a number of words in your last answer which I would like you to explain?

A. Diarrhœa means an abnormal discharge of the feces which are generally watery. Pneumonia (pronounced "numoneah") means an inflammation of the lungs. Pleuritis means an inflammation of the pleura. Peritonitis means the inflammation of the peritoneum. Enteritis means an inflammation of the small intestines. Catarrhus means an inflammation of the mucous membrane. Gastritis means an inflammation of the coats of the stomach.

Q. What is the pleura?

A. It is the membrane which envelops the lungs.

Q. And what is the peritoneum?

A. It is the membrane which lines the abdominal cavity and which holds the intestines as if in a bag.

Q. Are not indications about the tongue noticed even in people enjoying good health?

A. Yes. Bilious persons who may enjoy comparatively good health frequently have a furred tongue in the morning, and a rough, dry and furred tongue has been noticed in persons who sleep with their mouth open.

Q. Does not the condition of the blood indicate certain conditions of the tongue?

A. Yes. The pale color of the tongue indicates a serous condition of the blood. This color of the tongue is also noticed in chlorosis, of a great loss of blood, of chronic disorders, when there is a sinking of strength as in acute maladies, in enteritis and dysentery when there is but little fever present.

Q. What is the indication of a red tongue?

A. When the intestinal canal is subjected to much inflammation, or there is inflammation of the lungs, or acute exanthemata, the tongue becomes very red and the prognosis is bad.

Q. Does the tongue ever get black?

A. Yes, when the blood becomes vitiated as in scurvy or the setting in of mortification and in the last stages of phthisis when death is near at hand the tongue gets black.

[TO BE CONTINUED.]

## THE CLOUDING OF THE MOUTH MIRROR.

BY THEODORE F. CHUPEIN.

We first saw in "Ash's Quarterly Circular" the suggestion made of soaping mirrors to prevent the clouding by the condensing of the breath on the glass. We have tried it and found it effective. Rub the end of the finger on a cake of soap, and apply this lather to the mirror. Now wipe off the lather with a napkin, and the mirror may be placed in the mouth and may be held there for some time without becoming clouded

## PLASTER BOWLS. AND CLEANING SAME.

The best bowls we have found for mixing plaster are manufactured in Japan. They are procured at nearly all stores which deal in Japanese goods. The reason we have found them better than other bowls is because they are absolutely hemispherical, and they are covered with a peculiar enamel to which the plaster will not adhere. They are about four inches in diameter by about two inches high, and are perfectly plain, with no figuring either in the inside or out of the bowl. To clean these bowls we have found it best to let the remains of the plaster harden in them after use, when, if very hot water be poured into the bowl, the plaster peels off and leaves the bowl absolutely clean.

We are indebted to one of our exchanges for the suggestion of using hot water to cleanse the bowls, and having tried it have found it "A No. 1."

## JOHNSTON'S ETHEREAL SOLUTION OF SOAP.

There is no more useful preparation for the dental laboratory than this. For a parting material for impressions and models; as a medium for separating the two halves of a flask, in vulcanite work; for removing the grease, dirt, wax and plaster which adhere to the hands and work into the meshes of the skin, rendering the hands and fingers soft and clean, with a delightful feeling of pliability, it is invaluable.

## CATARRH OR CASEOSA RHINITIS.

### By Theodore F. Chupein.

The odor emanating from the unfortunate people afflicted with this disease, is so revolting, nauseating and insupportable, that the fetor permeates, to a considerable extent, all about them, and is more and more disgusting the nearer one approaches such patients.

We had a patient to work for recently, thus afflicted, which caused us such nausea that we had to leave the office every now and then to get a whiff of uncontaminated air. We mitigated the ordeal to which we were subjected by plentifully sprinkling our beard and mustache with as powerful a perfume as we had, but this was of little use, the stronger effluvia predominated. We next sprinkled our handkerchief with "Oil of Peppermint," which is a very powerful odor (and though not one which we would select as a "perfume de mouchoir," it is infinitely preferable to the odor of catarrh), and letting the end hang out of our breast-coat pocket, we managed, to considerable extent, to overcome the other stink. It seemed to us that if we had lighted a perfumed pastil and let it burn while we were thus engaged, we could have still more rendered bearable the odor emanating from our unfortunate patient, but we had none at hand at the time.

### FUMIGATING PASTILS.

These put forth an agreeable odor and may be placed at the base of the operating chair, the smoke rising from them (2 or 3 may be lighted) greatly mitigates the odor. They are made as follows:

| | |
|---|---|
| Gum benzoin, powdered | ¼ oz. |
| Cascarilla bark, “ | ¼ oz. |
| Willow charcoal, “ | 1½ ozs. |
| Myrrh, “ | xxxv. grs. |
| Oil nutmegs | 23 drops |
| Oil cloves | 23 drops |
| Gum tragacanth | 3 dwts. |
| Niter | 3 dwts. |

A mucilage is made of the gum tragacanth with 4 ozs. of water by dissolving in a pan suspended in another pan of water, constantly stirring while the water boils in the outer vessel. Add to this the niter, until thoroughly incorporated. The mucilage is poured into a mortar, and the benzoin, cascarilla, myrrh and charcoal are added with constant grinding. The charcoal should be added by the tablespoonful, until the whole is made into a paste, when the 23 drops each of oil of nutmegs and cloves are added. The mass is then manipulated with the fingers into little cones about one and a half inches high by a half-inch in diameter at the base, and set aside to dry.

The materials cost about 25 cents, and will make about 90 pastils.

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# SELECTED ARTICLES.

## SUBMARINE GOLD FILLINGS.

BY WILLIAM HERBST, D.D.S., Berlin, Germany.

Long before Barnum discovered the rubber dam, we filled teeth with gold under water, notwithstanding the fact that this was always considered unsatisfactory as to results. Thus filling with gold in the presence of moisture is old, but it is new that we may use gold for filling teeth admitting moisture, and obtain perfect results.

The gold which can be used under moisture, is a chemically pure foil, very soft, and of the thickness of the ordinary number sixty foil, but without the unyielding and stiff properties usually found in foils of that thickness. This gold is entirely non-cohesive, when not annealed.

### CAVITIES SUITED TO THIS METHOD.

The cavities in the approximal surfaces of teeth may be filled under moisture, as well as those in the occlusal surfaces, but the walls must be comparatively strong. Contour fillings, however, as for example, the restoration of the lost corners of incisors and cuspids, are impracticable. Fillings which must have a convex surface when finished, are difficult, and I will publish my experience in this class of work later; for the present, I will only speak of fillings, which I am positive may be inserted by this method more easily and safely under water, than with the aid of the rubber dam, and which are even more easily introduced than tin-gold fillings.

The instruments required are a tin-gold plugger, a sharp, slightly bent instrument; also a chisel shaped, narrow instrument, and lastly two excavators, one a hatchet and the other a hoe. None of these, however, should be sharp enough to cut or pierce the gold, with the exception of the tin-gold plugger, which should be serrated. The edges of the instruments should be removed with sand paper.

The gold may be picked up on the points of the instruments which may be rubbed on sand paper occasionally to facilitate adhesion. The gold is preferably kept on a wooden plate and moistened with water, which makes the manipulation easier. Care should be taken that the instruments do not become too blunt, which may be obviated by rubbing the sides as well as the cutting edges on the sand paper.

In addition to the instruments named above, we also need a few round stone or steel instruments, to use with the dental engine.

### METHOD OF FILLING WITH GOLD UNDER WATER.

It would be wise to select for the first experiment, a cavity in the grinding surface of a tooth out of the mouth, by which the value of the method may be tested. The method mainly consists of a system of wedging all the separate pieces of gold along the walls; consequently the points of the instruments should be smooth with the exception of the tin-gold plugger. With the assistance of this last instrument, the cavity is filled with the submarine gold, each layer being condensed with the wedge shaped instruments. In deep cavities, the first layer may be condensed by means of the rotation method, and tin-gold may be used as a base, if desired. It is important that the filling should be made as high as required to extend beyond the margin of the cavity at the point at which the filling is begun, and this rule is followed as the filling is gradually made to approach the opposite wall. All depressions made by the instruments, are to be filled by the addition of gold. The chisel shaped instrument should be forced into the filling, and the space thus made filled by adding more gold, which should be continued until completed.

Sometimes it may occur that the gold will not remain in these spaces made by the instrument. The fault usually lies in the fact that the piece used is too large, consequently a smaller piece may be tried, or a depression can be made elsewhere, lateral pressure thus closing the first space, and the second space may be filled with gold. The method is much simplified if the gold, during its introduction, is held in place by an assistant. When the filling is completed, the surface must be perfectly condensed by means of agate or steel burnishers in the engine, and is then polished.

Fissures in the grinding surfaces of the teeth, are filled with the wedge shaped instrument only. They are packed with gold from the posterior to the anterior portions of the cavity. To complete the filling, the wedge shaped instrument is pressed into the gold near the wall, and the hole thus made is filled with gold again, which process is repeated until the wedge shaped instrument can not be pressed into the filling at any point.

In cavities in the approximal surfaces, great care is needed in the adjustment of the matrix, as well as in packing the gold against the cervical margins. These fillings are finished in the same manner as those in the grinding surfaces.

### Faulty Gold Fillings Readily Repaired.

Old gold fillings, which, through wear, flaking off or caries, have become defective, may be readily repaired with submarine gold. Even old amalgam fillings, the edges of which have become defective, may be repaired with submarine gold. In such cases, burr out the imperfections along the edges, and the cavities thus formed may be filled as fissure cavities would be, and when completed, the result is most satisfactory.—*Items of Interest.*

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## AMALGAM IN COMBINATION WITH CEMENT.*

By J. D. Whiteman, D.D.S., Mercer, Pa.

Of all the methods that have been advocated for the manipulation of amalgam, the most valuable one of all seems to have been almost entirely overlooked by the whole profession, although introduced years ago and used constantly by men eminently successful in the use of this material. I refer to the use of amalgam and cement in combination.

Probably the most prominent objections raised against amalgam fillings are, shrinkage, lack of edge strength and discoloration of both filling and teeth. Now, if this material is used in the ordinary way, that is, packed directly against the walls of cavity or even against varnished walls, all these objections are always seen to a certain extent. For this reason all cavities before being filled with amalgam, should be first lined with cement, and the amalgam added and forced into the cement while it is still very soft, in order that a union may be accomplished between the two materials. Very often a cavity may be two-thirds filled with cement, and in that case the filling is only veneered with amalgam, and as one would conclude from Dr. Black's experiments, the amount of shrinkage increases and decreases in proportion to the size of the mass of amalgam. That is only my conclusion, however, but I believe it is only reasonable to presume that it has an influence in reducing the shrinkage. Besides this, the filling will have permanent adhesion to the walls of the cavity, which is the greatest possible assurance against leakage. The discoloration of the teeth, resulting from fillings of amalgam alone, is entirely overcome. The cement forming the bulk of the filling, the amalgam coming in contact with the tooth only at the margins, and there only to the depth of the enamel. This feature removes entirely the objection to filling the posterior surfaces of canine teeth, the anterior as well as the posterior surfaces of the bicuspids, and makes it practical to fill even incisor teeth when they are dead and broken down so badly that to fill them with an all-gold filling would require more malleting than they would bear with any degree of certainty. Such a tooth may be restored, perhaps, to the extent of four-fifths of the entire filling required with cement and amalgam; the labial portion and the cutting edge, if it be involved, built up with gold, at a subsequent sitting. The operation is less severe on the tooth than if the filling were all of gold, and if properly done, the appearance is not affected in the least; and by virtue of the large amount of cement used, the tooth is materially strengthened.

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*Paper read at the Lake Erie Dental Society, May, 1897.

By using this valuable combination of materials in a similar manner, the molar teeth may be restored that are so badly broken down that it would be almost, if not quite impossible, to secure sufficient under cut to retain a filling of amalgam alone.

To build up a badly broken down molar tooth it is usually necessary to apply the rubber dam. All frail walls are first cut down sufficiently to enable one to over-build with amalgam and obtain the thickness of that material over them, to secure the required edge-strength. A dove-tail is made in the pulp chamber, which is generally all the provision for anchorage required. Perfect dryness being of course obtained, thin cement is smeared all over the surface of the dentine and the dove-tail in the pulp chamber nearly filled; a large block of amalgam is now forced into the cement in the dove-tail, small and rather long pieces, about like a grain of wheat, near the margins, and are burnished down to them, forcing out the excess of cement. The cement now having become stiff, take an excavator and expose all the margins to make sure that there will be no cement there when filling is completed. A suitable band matrix is now adjusted, and a small piece of amalgam packed carefully but firmly against the margins. Complete the filling with a new mix of amalgam preferably of a white alloy, wafered hard with pliers. Pack with the automatic plugger, using a large straight point, about the size of a No. 7 bur. The removal of the excess of mercury is facilitated if, after every few pieces of amalgam are packed, a ball of bibulous paper is placed over the filling and struck several hard blows. This will also very much solidify the filling, and one packed in this manner will admit of the cusps being nicely curved up and the whole filling finished, so as to present a very artistic appearance, even though it be of amalgam.

Circumstances often prevent the filling of the bicuspids and often the cavities in the posterior surface of the cuspids with gold.

It is a very easy matter, indeed, to fill any cavity in these teeth with cement and amalgam combined in this way and produce a very esthetic result. The dentist who neglects to do it, but packs the amalgam directly against the walls of the cavity, thereby discoloring the tooth and often fairly blackening it, certainly fails to do his whole duty.

The advantages that may be reasonably claimed for a filling inserted in this manner over one of amalgam alone are worthy of repetition.

*First.*—Adhesion to the walls of cavity.

*Second.*—The discoloration of the teeth is entirely overcome.

*Third.*—It hermetically seals the tubuli of the dentine.

*Fourth.*—It strengthens the tooth, especially the walls of cavity.

*Fifth.*—It lessens the susceptibility to thermal changes.

*Sixth.*—It makes a filling more compatible with tooth structure.

*Seventh.*—It avoids the necessity of weakening walls of cavity with heavy undercuts.

These, I think, fully warrant the assertion of Dr. Driscol, of Florida, "That the time will soon come when it will be considered

malpractice to insert any amalgam filling without cement under it."
—*Ohio Dental Journal.*

## CATAPHORETIC EXTIRPATION OF LIVING PULPS.

By Vincent M. Munier, D.D.S., New York.

When I make the statement that the most sensitive patients will allow you to perform any operation on their teeth you may deem necessary by using cataphoresis, I speak from practical experience, as the following incidents of office practice will show.

### Cocaine Which does not Deteriorate.

Mr. Y. presented himself at my office for treatment, and upon examination of his mouth, I found several badly decayed teeth. Taking the right upper first bicuspid, which was extremely sensitive, I applied the rubber dam, and made ready the volt-selector. For the negative pole, or electrode, I used the sponge dipped in warm water containing 20 per cent. salt. The positive pole, or electrode, was a platinum pin bent into suitable shape, and laid on a pellet of cotton saturated with a 20 per cent. aqueous solution of cocaine containing one or two drops of Calvert's carbolic acid, which has proven very satisfactory, as it preserves the solution for weeks, yea, for months, if in a brown bottle and tightly corked.

As my patient was very nervous, it required thirty-five minutes to reach ten volts. Holding it there for twenty minutes, I was able to extract the living pulp without pain to the patient.

Another patient was a young woman about twenty-two years of age, with the pulp in the right lower twelfth year molar aching, the cavity being in the anterior approximal surface. After preparing in the usual way, I was twenty minutes in reaching eight volts. After fifteen minutes I was able to extract all but a small portion of the pulp from the anterior canals. I renewed the application, and in twelve minutes was able to remove the remainder of pulp.

Those of us who have been using cataphoresis seem to get the same results, but with varying amounts of electricity. I have never been able to reach fifteen volts, my average having been five and one-half volts, but as I obtain satisfactory results, I am led to believe that some dentists are pushing the voltage too far.

In my experience cataphoresis has proven successful in every case. The time required is longer, but I charge more, and the patients seem to be willing to pay more. So, both are benefited. The patient has the work done without pain, and the dentist receives a larger fee.—*Items of Interest.*

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# RADICAL TREATMENT OF CHRONIC ALVEOLAR ABSCESS.

By S. H. Guilford, D.D.S., Ph.D.

To the thoughtful mind it appears truly surprising that so little advance has been made in recent years in the treatment of obstinate cases of alveolar abscess. The line upon which the treatment of these cases is generally conducted, varies very little from that of twenty-five or even forty years ago.

Some minor changes have taken place, as in the variety of medicaments employed, and the forms of drills and other appliances for gaining access to the seat of disease, but the methods of treatment have undergone very little modification. The old method of treating serious pathological conditions existing at or near the end of the root by forcing medicaments through the canal still prevails to a surprising extent.

In alveolar abscess of recent origin, especially where the tooth is a single-rooted one and where there is a fistula for the exit of pus or medicaments, treatment by way of the canal, is not only justifiable, but oftentimes constitutes the simplest and most direct method of treatment, but where the root affected has a contracted canal and is more or less curved, as in certain molar roots, access to the seat of trouble is not only exceedingly difficult, but oftentimes impossible with any degree of certainty.

Attempts to reach the apical end of the root in such cases either by drilling or reaming too often result in the unconscious perforation of the root at some point of its length, thus increasing the complications of the case and making failure more certain.

It is no uncommon thing to meet with cases where an abscess has been treated for months or even longer by way of the canal, and after an abatement or temporary suspension of the manifestation of disease symptoms, the root has been filled only to revert to its former condition in a very little while.

In other cases there is failure to obtain even sufficient temporary improvement to warrant the closure of the root canal, and treatment is continued and continued in the hope that a change for the better may take place until the patient is discouraged and either decides to consult some other practitioner, or insists upon the removal of the affected tooth.

Probably no class of cases gives the young practitioner more anxiety or causes him to feel his helplessness so much as those of persistent alveolar abscess.

Of the letters asking advice, received by any dental college professor from young graduates, a large proportion will be found to bear upon this subject. They wish to know why the abscess does not yield to treatment and what medicaments other than those they have employed can be suggested for the case in hand.

The feeling seems to prevail that the failure to secure success lies with the drugs they have employed, or possibly with the manner of their introduction.

If the hidden parts that they are treating could be laid open to their view they would soon discover that the cause of their lack of success in treatment was due to a condition that drugs alone could not relieve—one that needed mechanical or surgical aid rather than medicinal.

The commonly accepted idea of an alveolar abscess is that of a sac at or near the end of a root which has been formed by the pericementum becoming loosened from the cementum of the root through disease, and whose function has been so changed by pathological causes as to be pyogenic in character. That to restore the parts to health it is only necessary to treat the condition as we would treat an abscess anywhere in the soft tissues of the body; that is, to empty the sac, remove all traces of pus by syringing with water and hydrogen peroxide or pyrozone and then apply some suitable cauterant and stimulant to alter the character of the secretions of the inclosing membrane.

It must be borne in mind, however, that an alveolar abscess differs radically from one confined to the soft tissues alone in that it is so surrounded and enclosed by bony tissue that this latter becomes readily affected and destruction of its substance supervenes.

When this necrosis occurs, as it does in all or nearly all cases of alveolar abscess of long standing, we have a complication that medicaments alone cannot possibly relieve. To effect a cure, the diseased bone must necessarily first be removed, after which medicaments or possibly the recuperative processes of nature alone aided by antiseptic treatment will bring about the desired result.

No one is so well equipped to perform this slight surgical operation as the dentist with his engine and burs and his correct knowledge of the anatomy of the parts.

It is a very simple operation to lance the gum over the seat of the disease, drill through the process to the root apex and then, with a round bur of sufficient size, cut off the apical end of the root and remove as much of the adjacent alveolar tissue as may seem to be affected. Previous to doing this the root should be permanently filled, for it cannot be done so well afterward. After the operation it is only necessary to wash the cavity well to remove all debris, pack with iodoform gauze, and leave the result to the kind hand of nature.

This treatment of persistent alveolar abscess is radical, but it is also simple, and in the light of our present knowledge is the only rational method of treatment in cases of this character. Although it has not yet become a common practice it is growing in favor, and with those who do employ it is followed by the most satisfactory results.

The day for long, fruitless treatment of cases of alveolar abscess, which by their obstinate resistance to medicinal treatment plainly indicate necrotic associations, is past, and the sooner this is recognized the better it will be for both patient and operator.—*The Stomatologist.*

## SOME NOTES ON THE PREPARATION OF CAVITIES.

By S. H. Guilford, D.D.S., Ph.D.

A class of cavities most difficult to properly prepare are those on the approximal surfaces of the incisors. When the teeth are in normal contact, they should be well separated to afford suitable access, after which the weak margins must be broken down, the cavity properly opened and the decay removed. Much of this may be done with a round bur of convenient size, which in ordinary cases will answer for almost the entire operation of opening, preparing and shaping the cavity. These cavities, when confined to the approximal surface, are given the retentive form by moderately deepening the cervical wall and slightly undercutting the opposite or incisal wall.

The labial and lingual walls should never be grooved for retaining purposes, as they are weakened by it, and the color of the gold may show through the enamel.

In many cases a starting pit is allowable in the dentin of the cervical wall, to start and anchor the filling ; but the incisal wall must not be weakened by any deep undercut.

Fillings in this position are not subjected to any great strain, and therefore slight inward enlargement of the cavity will retain them.

Should the cavity be large, we may not be able to avoid having the gold show upon either the labial or lingual surface or both; but where circumstances permit, the lingual wall should be more freely cut away than the labial.

If the cavity should extend perilously near the incisal wall, or cutting edge, so as to weaken it, the corner had better be removed and the cavity extended along the incisal edge for the purpose of properly securing the filling.

TREATMENT AND SHAPING OF THE CAVITY MARGINS.—This third stage of cavity preparation is a most important one, and frequently does not receive the careful attention it deserves. It should be remembered that the enamel prisms run in radiating lines from the dentin to the outer surface of the enamel, and that while they are capable of resisting great stress in the direction of their length, they are easily separated laterally. For this reason the margins of a cavity should be on a line parallel with these prisms wherever possible.

On the convex surface of a tooth this is always possible, and will give us a cavity the orifice of which is somewhat flared outwardly, like the mouth of a trumpet. The line of this flaring will form at least a right angle, with the surface of the tooth, and is not only the most convenient form for filling, but is one that gives to the filling and the adjoining walls the greatest security and strength.

Margins thus prepared are often spoken of as being *bevelled.* If the wall of the cavity formed an acute angle with the outer surface, some of the enamel prisms would be bisected and their outer ends would rest upon the filling. Any strain to which they might subsequently be subjected, would probably cause them to break and the margin be ruined in consequence.

If the angle, formed by the cavity wall and enamel surface, happened to be *obtuse*, the margins would be safe from breakage, but the filling would taper outwardly to a feather edge and be very difficult to finish properly, besides being liable to fray up and become rough.

It will therefore be seen that for various reasons all cavities should have *bevelled* margins, and that this bevel should never form less than a right-angle with the tooth surface.

A little care and practice ought to enable any operator to secure the proper bevel in all cases. When the cavity orifice is upon a concave surface (as upon the occlusal surface of a bicuspid or molar), this bevelling is just as important, although in such cases the outer ends of the enamel rods will have to be sacrificed to obtain it.

This, however, will not be objectionable, for inasmuch as the inner ends of the severed enamel rods are covered by gold, no injury can befall them.

This bevelling of the outer walls of a cavity should be the very last part of the procedure, previous to the introduction of the filling, so that they may not be subsequently marred, and it should be seen to that the margins are not rounded in preparation, or much of their intrinsic value will be lost.

A bur of the usual forms should not be used for the final preparation of the margins, as by its use we can scarcely avoid rounding the edges. A chisel used with a back and forth scraping motion is best, although a small file-ended instrument, known as a *cavity trimmer*, is nearly as good where it can be employed.

In cavities of large enough size to admit of it, a very perfect bevel and finish can be given to cavity margins by the employment of small corundum points of suitable shape mounted on mandrels. Such mounted points of varying sizes and forms can be procured at the dental depots, or they can readily be made by softening a piece of broken corundum disk or wheel, attaching it to a worn bur and trueing up while warm.

In use it will not chatter or jump, but will grind the enamel to a true and even surface.

In simple cavities, upon exposed surfaces, the bevelling of the orifice may be done with a fissure drill if the point of it be kept within the cavity. The sides of such a drill being parallel, the margins cannot be rounded by it if held in the position described.

Many a filling, otherwise good, has eventually failed from improper shaping of the enamel margins, and for this reason too great care cannot be exercised in their preparation.

It is equally important, also, that after being properly formed, these margins should not be injured by contact with the bare plugger in the act of introducing the gold. The plugger point should never come in contact with anything except the gold.

All the niceties of preparation must be observed to obtain the best results, and anyone of fair skill will soon acquire facility in their performance.—*The Stomatologist.*

## THE PRACTICAL PLACE.

### SENSITIVE DENTIN.

I think sensitive dentin a normal condition. All real tissues with rich nervous supply are sensitive. The fibrille undoubtedly have an intimate relationship with the pulp, and any injury to the fibrils is conveyed to the pulp. Healthy dentin is sensitive, but not to the same extent as diseased dentin (decayed dentin).

I don't believe in the theory of inflammation in the dentin. We cannot have inflammation without blood-vessels, and there are no blood-vessels in the dentin. The fibrils in the dentin are nerve fibrils, and are a prolongation of the odontoblastic cells on the surface of the pulp.

Hypersensitiveness of the dentin is dependent on the amount of acid present in the decayed structure. This hypersensitiveness may be diminished almost instantly by putting in the cavity of decay a little bicarbonate of soda before beginning to excavate.

Cavities along the labial and buccal surfaces are often more sensitive because they are bathed in an acid mucus from the gingive. It is always well to apply a little bicarbonate of soda before beginning to cut these, especially if the rubber dam be not first applied.

I don't think the nearness or distance from the pulp has anything to do with the excessive sensibility.

My treatment for sensitive dentin is the following: First. Apply rubber dam. Then pack into cavity for a moment bicarbonate of soda. Then wipe the cavity with absolute alcohol, dry thoroughly with warm air (not hot air), then put into the cavity for a few moments Robinson's remedy (equal parts carbolic acid and caustic potash) and dry the cavity again, and go ahead with sharp excavators. When I have done this I have very little complaint from patients. I don't think cutting from the pulp instead of toward it has anything to do with the promotion or abuse of pain in excavating. Somebody made such an assertion years ago, and it has been handed along from one practitioner to another without question. There is no physiological reason why it should be true, and my experience and observation convinces me that there is nothing in it but theory.

If the dentist will take the time in each case to give preliminary treatment indicated, he will not be troubled much in his effort to excavate sensitive dentin. He may be obliged to renew the application if the decay be deep seated, but it is well worth the time spent.

Dr. Cheney: Apply rubber dam, pack the cavity with bicarbonate of soda for a minute or two, wash out with alcohol, and evaporate with warm air, not hot, using the warm air till dentin is dry. If this does not put the dentin in condition to be worked with sharp instruments without much pain, I place in cavity a pellet of cotton dipped in Dr. Black's 1, 2, 3 mixture, or some of the essential oils, tannin and glycerin paste, cocain and glycerin paste, or Robinson's remedy, drying out with warm air. This treatment in a majority of cases works very nicely. In mouths known to be strongly acid, or where there are labial or buccal cavities I have the patient use Phillip's milk of magnesia as a wash for a few days before the operation. With extremely nervous patients bromid of potassium in ten or fifteen grain doses, three times a day for three or four days, will in many cases work like a charm.

I prefer bromid of potassium to morphin and the coal tar derivatives, though great benefit comes from these many times.

Dr. Craven has well said "Much may be accomplished by discreet impressions made on the mind of the patient in a conversational way." Keep the patient interested in something foreign to the operation.—DR. E. T. DARBY, Philadelphia.

### GUIDES TO THE ENTRANCE OF ROOT CANALS IN DIFFICULT CASES.

By difficult cases is meant bicuspid and molar, with large cavities decayed below the gum margin, especially disto-occlusal, presenting dead or dying pulps, or alveolar abscess.

To facilitate manipulation and meet the requirements of antiseptic treatment, the writer has found the following method to be a great saving of time and annoyance to both patient and operator:

The difficulty in this class of cases is—first, to adjust the rubber dam; second, the difficulty of finding and passing the nerve broach into the canals.

The method proposed to overcome these difficulties is, first, to excavate the cavity without the rubber dam, flushing freely with medicated water, finding and opening the entrance to the canals; second, small wedgwood pegs and copper points, together with the alcohol lamp and temporary stopping, should be provided at hand, and by means of a hand matrix, the rubber dam and gum is forced back and held firmly with the left hand while the cavity is dried, and either the copper or wood points forced into the entrance of the canals.

The temporary stopping is then packed in and around the pegs until the cavity is filled. The matrix and points can then be removed, presenting simple "entrance guides" to the root canals.

The time consumed in this first operation should not exceed thirty minutes in most cases.

For subsequent manipulations the rubber dam can be easily and quickly adjusted, the treatment made and the entrance guides closed with a very small piece of temporary stopping, making a clean, dry dressing, and thus avoiding the filthy cotton stoppings.

Treating teeth prepared in this way is a pleasure rather than something to be dreaded.

Third, where decay has involved the buccal side, and perhaps the mesial or distal angle, preventing use of the rubber dam for treatment, prepare the cavity, making good anchorages; fix the pegs in the canals and fill permanently with amalgam, in and around pegs. The latter can be removed before or after the amalgam has hardened.

Fourth, when a tooth is to be crowned, but decayed so as to preclude the use of the dam for necessary treatment, the root should be prepared and the gold band fitted for the crown at once, cement placed about the lower edges and driven to place; the rubber dam is then adjusted and entrance guides found by means of the pegs, as described.

When the treatment is finished and roots filled, the bite is taken, the band removed and the operation completed in the usual way.

The use of a hand matrix is necessary for this class of work, because more or less force is required to carry and hold the rubber dam and gum back so as to clearly expose the cervical borders. It can be bent and adapted to any form of tooth, besides it can be put in position at once, and is a time saver; by its use also entrance guides can often be made with a temporary stopping, without the rubber dam.

The writer believes that a great many failures in the treatment and filling of root canals is due to the lack of some means to guide and carry the nerve broach, medicaments and gutta-percha into the canals, and for this reason urges the use of entrance guides to canals that are small or in such a position as to obstruct sight and free manipulation, in which case a long or short funnel guide can be formed, as described, in two or three minutes, by means of which the gutta-percha can be controlled and made to flow directly and readily into the canal.

If doubtful as to the merits and practicability of the scheme proposed, a trial in the way of practice on teeth outside of the mouth is suggested.—DR. J. AUSTIN DUNN, Chicago.

## TAKING IMPRESSIONS.

We have received the following communication from Dr. W. E. Robertson, of Alvarado, Texas:

"My method to perfect an impression is to take the impression with modelling compound and allow it to harden thoroughly, then trim off surplus, warm the inner surface over lamp, but not enough to affect main body, replace in the mouth and press firmly home. Now, those wishing to do me a favor may let me know how they succeed, and if this prove of interest will 'come again' on difficult points."—W. E. ROBERTSON.

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### TAKING IMPRESSIONS AND APPLYING THE RUBBER DAM.

Get your druggist to make you some lozenges with one quarter grain of cocain to each lozenge. Before taking the impression, allow the patient to dissolve one of these lozenges in the mouth and swallow the spittle. If one is not sufficient, give the patient another lozenge, allowing time for the lozenge to dissolve slowly, and you will find that you can take an impression with plaster of Paris without inconvenience to the patient or yourself.—C. V. SNELGROVE, L. D. S., Toronto.

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### CHLORAL CAMPHOR.

There are many times when you do not wish to use cocain solutions or other drugs that are likely to be poisonous, and you will find that if you will take a pair of pointed pliers and dip it in a solution of chloral camphor, passing it gently around the root of a tooth which is free from blood and saliva, as well as you can in a short time, an operation that is usually very painful would in some cases become entirely painless, in others almost so, and you have not a bad smelling drug in the mouth.—A. W. HARLAN, *Review.*

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### NITROUS OXID AND ETHER ANESTHESIA.

The disadvantages of ether as an anesthetic have been overcome by combining nitrous oxid with the ether fumes. After three or four inhalations of nitrous oxid gradually substitute ether fumes. In two minutes the patient is unconscious and there is no choking or distress.—*London Lancet.*

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### EASILY NAUSEATED PATIENTS.

Many people are very sensitive, and will become nauseated at the slightest touch at the back part of the tongue or the roof of the mouth. This can be overcome readily, I presume so in every case, by simply applying a little spirits of camphor to the tongue. A couple of drops will allay that sensation almost instantly, so that you can take your impressions just as nicely as if the patient were not at all sensitive at any time.—DR. WATKINS, in *The International Dental Journal.*

### BORING HOLES IN GLASS.

Strong glass plates, says the *Scientific American*, can be bored through by means of rotating brass tubes of a certain diameter, which are filled with water during boring. Finely pulverized emery is added to the water, and the boring solution is put into motion by a drill or bow drill. Weaker glass can be provided with holes by simply pressing a disc of wet clay on the glass and making the hole through the clay of the width desired, so that the surface of the glass is laid bare. Molten lead is then poured into the hole and the lead and glass drop down at once. The cutting of glass tubes, cylinders, etc., in the factories is based on this same principle.

### FOR COATING CEMENT FILLINGS

Parafline and resin melted together, in equal parts, make an excellent coating for cement fillings. These two agents just mentioned, while not strictly medicaments, are closely allied to them by reason of their antiseptic qualities.—DR. W. F. LEWIS, *Stom. Gazette.*

### OBTUNDING SENSITIVE DENTIN.

Formalin 20 per cent. with chloroform 80 per cent. obtunds sensitive dentin satisfactorily and quickly. Wipe out the cavity with the solution and dry with hot air. It should not be left long in contact with the dentin.—N. S. HOFF, in *Cosmos.*

### TO LINE RED RUBBER PLATES WITH BLACK RUBBER.

Before packing, coat the cast three or four times with a solution of black rubber, allowing each to harden before applying the next.—*Ohio Journal.*

### TREATMENT OF FISTULOUS TRACT.

Dr. Genese treats a fistulous opening at one sitting by fusing a little nitrate of silver on a small ball burnisher and forcing it through the fistulous opening to the apex of the tooth, thus scarifying the tract completely. The root is then filled.—*Cosmos.*

### To Check Excessive Flow of Saliva.

Dr. H. O. Logue cites a case of lower third molar, where flow of saliva was excessive and application of dam impossible. He says this was overcome through the action of sulfate of atropin, a dose of which (1-120 grain) I had her take three-quarters of an hour before her next appointment. At that time I found the mouth very dry, though not uncomfortably so. The salt of atropin has a much better effect on the secretion than the ordinary alkaloid. Its manifestation lasts from four to five hours.—*Items of Interest.*

### Simple Method of Cleaning Impression Trays.

Give the impression trays a coating of sweet oil with a woollen cloth dipped in the oil. Put them in strong soapsuds (made with soap shavings or powder), boil and wipe dry. Now polish with whiting by using a woollen cloth or fine leather. In this way you can keep your trays bright and clean, and the plaster will not adhere to them.—E. B. Edgers, D.D.S.

### Etymology of Cadaver.

"What is the origin of the word 'cadaver'?" An abbot, about 1216 conceived himself an etymologist, and as a specimen of his powers left us the word "cadaver," a corpse, thus dissected: "Ca," quoth he, is abbreviated for caro; "da," for data; "ver," for vermibus. Hence we have "caro data vermibus," flesh given to the worms. Yet this hardly applies to the cadaver to-day in the dissecting room. —*Dominion Dental Journal.*

### Removing Stains.

A solution of hyposulfit of sodium in water will remove iodin spots from linen, cloth, skin, in fact, from everything, almost instantly. The fresher the spots the quicker the action of the hyposulfit.—J. C. Emmerling.

### Treatment of Headache.

Dr. C. C. Crolly, of Pleasantville, New York, makes the following suggestions in regard to the treatment of a large number of headaches, such especially as are associated with a uric acid diathesis (*The Pharmaceutical Era,* July 4, 1895):

I treat headaches with the greatest success as follows; in fact I never knew my method to fail: One teaspoonful extract of malt (with a few drops of dilute hydrochloric acid, to stop fermentation), after meals. This will digest the starchy food. Five to fifteen drops of fluid extract cascara sagrada, if constipation is present, just enough for one evacuation. Half to one teaspoonful phosphate of soda three times a day. This can be continued indefinitely, without danger, and is more successful than salicylic acid. It is equally as good in acute rheumatism.

When phosphate of sodium is taken internally, there are formed in the urine, while it is descending through the lumen of the uriniferous tubules, by the chemical union of the uric acid with the salt and the decomposition of the two, an acid urate of sodium, and an acid phosphate, the di-hydrogen phosphate, and in this way does the patient get rid of his rheumatism, his headache, neuralgia, or other attacks dependent upon too great a quantity of uric acid.

## A New Substitute for Gold.

A French technical paper, the *Journal del' Horlogerie*, declares that a new amalgam has been discovered which is a wonderful substitute for gold. It consists of ninety-four parts of copper to six parts of antimony. The copper is melted and the antimony is then added. Once the two metals are sufficiently fused together, a little magnesium and carbonate of lime are added to increase the density of the material. The product can be drawn, wrought and soldered, just like gold, which it almost exactly resembles on being polished. Even when exposed to the action of ammoniacal salts or nitrous vapors it preserves its color. The cost of making it is about a shilling a pound avoirdupois.—*London News*.

## Salt for Deciduous Teeth.

While I was on my vacation this summer in one of the little cities outside of Paris, at the meeting of the French Dental Association, a gentleman presented at least half a dozen children whose baby teeth he had been treating with a saturated solution of nitrate of silver, with this addition: After he had the cavity thoroughly dry he would rub the nitrate of silver in and then fill the cavity with chlorid of sodium, rubbing it with a wooden burnisher. He had been doing that for fifteen or sixteen years. I asked him why, and he said it formed an insoluble coating over the decayed part of the tooth. Other dentists there had been using the very same method. I speak of it because some of the dentists may try it. I have tried it since my return and shall continue to do so. The salt formed a precipitate, chlorid of silver, which they claimed was insoluble.—W. W. Walker, in *Cosmos*.

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## THE CLOUDING OF MOUTH MIRRORS AGAIN.

In our July issue we published an account of how Mr. George Wallis, L. D. S., of England, had introduced an ingenious manner of preventing the clouding of mouth mirrors by first soaping the surface of the mirror and then wiping the soap off, by which process the moisture of the breath would fail to be condensed on its surface.

This note was taken from the *Medical Press and Circular* of the issue March 17, and copied in *Claudius Ash and Son's Quarterly*.

In the classification of some notes we have found one recommending soap for mirrors and microscopic lenses to prevent clouding, taken from the *New York Medical Journal*, March 20th, 1897, page 408, credited by that journal to the *Lyon Medical*, February 21st; credited by the *Lyon Medical* to the *Medicine Moderne*, of January 27th, 1897, and there given as an idea presented to the *Berlin Medical Society* by M. Kiriten.

The tracing ends here as it does not say where M. Kiriten got it, or whether the idea was original with him.

We have received a communication from Dr. E. I. Perdew, of Keokuk, Iowa, who says: "To see this old-time usage given as new is laughable indeed, for it is old to me. Twenty-seven years ago I, for the first time, found that soap would prevent the moisture of the breath from clouding the mouth mirror. I fell upon it by accident. I desired to clean a mouth mirror quickly and picked up a piece of soap and rubbed the mirror with it, rubbing this off with a piece of cotton, but as some of the soap still adhered, and having no water at hand, I breathed on the mirror so as to moisten it. You may understand my amazement when I failed to find any change on the mirror whatever, the breath refusing to cloud it. Since then I have always soaped my mouth mirrors. * * * * But I am in America and we know a few things here, and it would never do to tell our cousins on the other side that what they call *new* is *old* to us."

We are not disposed to dispute the claim of Dr. Perdew in the matter of this valuable suggestion, which he says he has practiced for twenty-seven years past; neither are we inclined to charge our English cousin, Dr. Wallis, or Dr. Kirten, of Germany, with the promulgation of an idea, which may or may not have been original with them, as bringing forward an old practice and foisting it as something new; so that we cannot better allude to these circumstances than by relating an anecdote:

The French poet, Voltaire, had written some beautiful lines in which exquisite ideas were beautifully expressed. Some years later, after Voltaire's death, another French poet used the same ideas as well as much of the language employed by Voltaire.

His confreres voted him, amongst themselves, a plagiarist and on meeting him called his attention to how he had made use of the ideas as well as the language of Voltaire. He defended himself stoutly of being a plagiarist and told his poetical friends "*Que les belles idees se recontrent quelquefois.*"

Thus may it have been with Dr. Wallis, Dr. Kirten and Dr. Perdew.

[THIRTY-FIRST PAPER.]

# LEADING QUESTIONS AND ANSWERS FOR DENTAL STUDENTS.

By Theodore F. Chupein, D. D. S., Philadelphia, Pa.

Q. Is the temperature of the tongue always the same, or is it variable?

A. The temperature of the tongue increases in violent internal inflammation, in typhus fever and in glossitis.

Q. What is glossitis?

A. An inflammation of the tongue.

Q. Are there any diseases or occasions when the tongue becomes cold?

A. Yes, the tongue gets cold in cases of Asiatic cholera, also when death is near at hand.

Q. Does the tongue give out any other signs favorable or unfavorable?

A. Yes. A tongue which is moist and clean is a favorable sign. If the tongue be clean, but dry and red, this indicates slow nervous fever with an inclination to eruptive disease, and is a bad sign. When the intestines are disordered, or there is disease of the skin, or lung trouble, or rheumatism, the tongue becomes coated or furred.

The coating of the tongue varies in extent, color and adherence according to the temperament of the individual.

Q. What other signs are shown by the tongue?

A. Sometimes the tongue becomes covered by a false membrane which occurs in larger or smaller patches, or may envelop the whole organ. The color of this membrane varies, being sometimes white, yellow or red. The greater the surface covered by this membrane the more unfavorable is to be regarded the prognosis. Sometimes we have the tongue covered more or less by pustules which are regarded as symptomatic. These pustules are sometimes separated, but at other times confluent. When they are confluent or flowing together or uniting with each other the sign is bad. The pustules assume at times a hard dry and a bluish or blackish color and are regarded as an unfavorable sign. When the pustules are soft, moist and are semi-transparent the indications are not unfavorable.

Q. What diseases do these pustules or aphthæ point to?

A. Gastritis, Catarrh, Enteritis, Metritis, Dysentery, Cholera infantum, Peritonitis, Intermittent fever, Typhus fever, Pleuritis, Pneumonia and Phthisis.

Q. Do you understand all these technical terms?

A. *Gastritis* means the inflammation of the coating of the stomach; *Catarrh*, an inflammation of the mucous membrane of the respiratory tract; *Enteritis*, inflammation of the small intestines; *Metritis*, inflammation of the womb; *Peritonitis*, the inflammation of the membrane which lines the interior of the abdominal cavity; *Pleuritis*, the inflammation of the membrane which envelops the lungs; *Pneumonia*, the inflammation of the lungs; *Phthisis*, a wasting pulmonary consumption.

Q. Can you mention when these pustules on the tongue indicate favorable and unfavorable prognosis?

A. The prognosis is regarded favorable when they discharge after a crisis of the seventh day, but when the discharge from them occurs from a general collapse of the physical powers the prognosis is unfavorable.

Q. Can you state concisely the general indications of the tongue?

A. *A white tongue* shows fever. *A brown wet tongue* indicates indigestion. *A brown dry tongue* shows depression, blood poisoning or typhoid fever. *A red moist tongue*, inflammatory fever. *A red glazed tongue*, general fever and loss of digestion. *A tremulous, moist flabby tongue* shows weakness and nervous apprehension. *A glazed tongue with bluish appearance* points to tertiary syphilis.

## DISEASES OF THE DENTAL PULP.

Q. What is the dental pulp?

A. It is a soft, highly sensitive and vascular organ occupying a position on the interior of all teeth.

Q. What is its color?

A. It is of a reddish-gray color.

Q. How is it regarded?

A. As the progenitor or rudimentary organ of the tooth.

Q. What is its office?

A. To supply the tooth with blood and sensation.

Q. Is it always the same size?

A. No. In young persons the pulp is larger than in older ones. It has the power of throwing off bony matter, encasing itself within its bony walls, somewhat after the manner of a silk-worm enveloping itself within its cocoon.

Q. How do the blood vessels enter the tooth to supply it with nourishment?

A. As minute as the foramina is at the end of the root, so small, indeed, that the smallest broach, even a hair, will not sometimes pass through, yet several arteries and veins enter this minute opening to supply the tooth with blood. These blood vessels enter the tooth and form a network of supply to the pulp. The pulp is divided into two portions. The bulb or crown portion occupying the crown of the tooth and the canal portion occupying the root.

Q. Is the pulp subjected to many diseases?

A. The diseases of the pulp are not numerous, but the knowledge of their pathological conditions is important to the dentist.

Q. Is the pulp regarded only as the central organ of the tooth?

A. No. Because the odontoblastic layer extends to all parts of the dentine, through the tubule, thereby carrying sensation from all parts of the tooth to the pulp.

Q. What do you understand by the odontoblastic layer?

A. The odontoblasts are the little cells which form the dentine. They are a kind of connective tissue situated next the pulp, the cells sending out rod-like processes to the under side of the enamel. These cells deposit lime salts around the fibrils and in this way the dentine is formed.

Q. Is the tooth painful if there be no exposure of the dentine?

A. The tooth is not painful, but it is sensitive to the slightest touch or the least impression.

Q. Does the pulp receive impressions through the enamel?

A. So highly organized is this that the slightest touch on the enamel with the finger, or the mere passing of a piece of paper or a thread over it will be perceived.

Q. Is the pulp affected through the enamel?

A. The pulp is not often seriously affected when the tooth is covered with enamel, but it may become so by a sudden jar or blow or concussion, as for instance in biting a piece of quill toothpick when the teeth are brought suddenly and violently together.

Q. What may result from this?

A. It has been known to result in the death of the pulp.

Q. What is the cause of toothache?

A. When by decay a portion of the enamel is destroyed, leaving the dentine exposed, a constant source of irritation is kept up in the dentine through the tubuli, thus affecting the pulp.

Q. Do these tubuli contain offshoots from the pulp?

A. This has not yet been demonstrated; but it may be presumed *that they do not*, since pulps have been removed *entire* from teeth; which if these prolongations existed the pulps would be torn into shreds in the effort to remove them from the teeth.

Q. How then is sensation conveyed to the pulp if these prolongations do not fill the tubuli?

A. A means of sensation is kept up by the contents of the tubuli. Such is the Theory advanced.

Q. But may not the sensation be practically demonstrated by cutting the dentine although the pulp be not exposed?

A. It may. And although there may be quite a thick layer of dentine overlying the pulp the sensation is quite acute when this is cut or even exposed to thermal influences.

Q. What do you mean by Thermal influences?

A. The changes of temperature from hot to cold. This is why we use the word thermometer, as it is an instrument for recording the changes of the atmosphere from heat to cold.

Q. How do these changes of temperature affect the pulp?

A. In the form of Pulpitis.

Q. What is pulpitis?

A. It is an inflammation of the pulp.

Q. What gives rise to it?

A. The exposure of the dentine by decay or abrasion, or thermal influence, whereby irritation and inflammation are set up in the pulp through the tubuli of the dentine.

Q. Is pulpitis amenable to cure?

A. If the pulp be put in a healthy condition, all irritation and inflammation suppressed, and these conditions sustained against recurrence, by judicious filling of the cavity with such material as will prevent the effect of thermal or any other influence which might lead to a second attack, pulpitis may be cured.

Q. Are all teeth affected alike?

A. No. The extent of this inflammation affects teeth of a highly vascular nature more than it does those which are very dense.

Q. Why is this?

A. In soft teeth the action of deleterious agents is more active than in those of a denser nature, hence a larger area of the dentine is exposed which leaves the tubuli, leading to the pulp, more extensively exposed and as a consequence a greater chance for irritation is offered.

Q. Does the exposure of the dentine by decay, abrasion or any other cause always lead to pulpitis?

A. It does not. The more contracted condition of the tubuli in dense teeth, leaves these little affected by the exposure of the dentine, and pulpitis results in such teeth only when decay results in the actual exposure of the pulp.

Q. But may not this irritation be set up when the dentine is worn away close to the pulp?

A. It may, but we frequently see a provision of Nature coming to the relief of such cases by the formation of *Secondary Dentine.*

Q. Is this always the case?

A. It is not, and is only observable in teeth of the middle aged and in teeth of a dense nature.

Q. What is secondary dentine?

A. It is a growth or deposit formed later than the original deposit. The whole pulp or canal chamber is changed into a bony mass, generally of a semi-transparent color. In these cases the whole remaining tooth becomes solid and there is no canal; the semi-transparent deposit indicating where the pulp formerly existed. It is the result of a new growth excited by the abrasion of the teeth whereby the dentinal fibrils are irritated, by which irritation a new deposit is provoked. This exudation or deposit occurring, as it does, on the walls of the pulp chamber gradually reduces the size of this until the entire space is filled and the pulp obliterated.

Q. What are the dentinal fibrils?

A. They are the occupants of the dentinal tubuli and are, according to Prof. Tomes, continuations of the odontoblastic cells which rest on the surface of the pulp.

Q. By what process does the pulp become exposed?

A. The destructive forces acting on the dentine removes layer after layer of this tissue until the pulp is laid bare.

Q. Is pain always present when the pulp is exposed?

A. Not always. Although this organ is supplied with a large number of nerve-fibres and is very sensitive and is easily affected by the impaction of food, or even by hot or cold air, it often bears this exposure with no manifestations of discomfort.

Q. Is this always the case?

A. It is not.

Q. What is the ocular evidence of an exposure of the pulp?

A. When an exposure of the pulp is visible, while it still retains its normal attributes, it is of a bright red color.

Q. To what is this due?

A. To the presence of the red blood-corpuscles.

Q. Does this red color change?

A. It does after a stagnation of the red blood-corpuscles occurs from the effect of the progress of inflammation.

Q. What may we infer from the presence of the bright red spot of pulp exposure?

A. That in this condition, as the pulp is in its normal state, it may be capped.

Q. What do you mean by capping the pulp?

A. The protecting of the exposed point of exposure by a filling which will exert no pressure or thermal influence on this sensitive organ.

Q. What does the profession suppose takes place when a pulp is capped?

A. That the pulp exudes a secondary deposit, thereby relieving itself by the aid rendered to it by the operation of capping.

Q. Has clinical experiment verified this?

A. It has not. A secondary deposit *may* result in temporary quiet, but capping, although sometimes successful, more frequently results in the mummification, degeneration or destruction of the organ.

Q. Is this red spot always visible?

A. It is not, as the exposure may be in cracks in the dentine which would impede the view.

Q. If we cannot see the exposure can we diagnose the condition of the pulp?

A. We could not; nor could we tell the length of time it has been exposed, or whether inflammation has set in or not.

Q. Is a slight exposure easily discovered?

A. On the contrary, it is ofttimes quite difficult to determine.

Q. May not the exposure be discovered with an excavator?

A. If the exposure has caused pain and irritation for some days the excavator will fail to discover it.

Q. How is it proposed to discover the exposure?

A. By means of the fine fibres of cotton pressed in all directions in the cavity.

Q. Is this test reliable?

A. Not always, yet it is frequently successful in discovering the exposure.

Q. When inflammation has set in from pulp exposure may the inflammation be checked, thwarted or abated?

A. Attempts to this end have generally resulted in failure.

Q. What course is then to be pursued?

A. Devitalization.

TO BE CONTINUED.

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# THE STUDY OF ANATOMY.

By W. C. Barrett, M. D., D. D. S., M. D. S., Buffalo, N. Y.

(Read by request before the National Association of Dental Faculties, Old Point Comfort, July 31, 1897.)

This association has wrought a great work in securing the adoption of something like uniformity of action in the admission of students, and in the raising of the general educational standard. If one would have some comprehension of its beneficent influence, he has but to reflect upon what was the general character of American schools, and what their reputation abroad before the organization of the National Association of Dental Faculties, as compared with the present condition. And yet it has done but a small proportion of its manifest duty. Its accomplishments have been elementary.

It is not too much to say that our professional reputation must be what our colleges make it. We are the educators of those who are to be the leaders in the professional matters of the future. The next generation of dentist will be what we shall make it. Legislators may pass laws to regulate and restrict dental practice, but the stream can rise no higher than the fountain head, and the practitioner of to-morrow must get his training and derive his professional knowledge from the school of to-day. He must enter the profession by submitting himself to our guidance. The colleges are the fountain-head, and the stream will be limpid or foul according to whether we purify or contaminate it.

This should be a proud position. It certainly is a responsible one, and woe betide the college professor who does not realize his accountability. The man who accepts the honor which may appertain to this distinguished station, without striving his utmost to be in every way worthy of it, to fulfill every duty with an eye single to the best interests of student and profession, is unworthy a place in our ranks. He who assumes to arm the young men of our country for the battle of life, to fit them and equip them for an honorable career simply that he may minister to his own good, who takes the teacher's place and ascends to the instructor's rostrum from selfish motives, is a worse hypocrite than the preacher whose every-day life belies his own sermons.

I believe that we are all sincere in desiring to make our schools, and through them the profession, all that they should be. To secure this it is not enough that we look solely to the preliminary qualifications of those whom we accept as candidates for a confidential position in American families. We need to make our instruction as perfect as possible. This cannot be done unless there is a generally accepted standard, and some uniformity in system. At present one of our greatest sources of weakness lies in the fact that there is no common comprehension of a standard of methods. One school begins instruction with the alphabet, proceeds to the construction of simple words, and by regular gradations to the building up of sentences. Another commences by an analysis of the sentence into its component words, and then studies the elementary symbols constituting the words.

That is, one teacher is synthetical, and the other strictly analytical. A student takes his first and second year in one school, and then circumstances or inclination cause him to finish his course at another. He commences under analytical teachers, and closes with a school that only arrives at the stage of analysis in the closing year. Hence, in reality that student never reaches the end of any regularly graded course. In this way the practical efficiency of that graduate can never be assured. Let me illustrate this by the various methods of arriving at a knowledge of that basal study in all schools that attempt to teach the healing art—anatomy.

Some teachers open their course with an examination of the elements of which the human body is composed. That is, they begin with histology. They commence with the cell, and after having given a fair knowledge of that, they proceed to construct the cells into tissues, which are then considered. Then the tissues are built into organs, and finally the organs into the systems which they compose, and they do not arrive at a consideration of the human body as a whole until the last year.

Another pursues the opposite course. He begins with a study of the anatomy as a complete system. He considers its functions, and then goes on to study the organs whose actions make function, and finally to the ultimate elements of which organs and tissues are composed, and whose aberrant functions afford the pathological disturbances with which it is to be his life's work to battle.

The student who spends his first year in a school that begins with histology, and who goes to one that ends its course with tissue elements, never gets beyond elementary matters in his entire college training. This certainly will not tend to make the best practitioners, or to raise our profession to its highest point of efficiency. There should be a comprehension of the benefits of each method, a careful discussion of the merits of all systems of teaching, and an intelligent and discriminating adoption of that which is best. To this end I have accepted the invitation of the executive committee to bring this subject before you.

I am a believer in the analytical system. I think it is easier to arrive at an understanding by taking in pieces that which we do not construct, and thus get a knowledge of the mysteries of that which we must attempt to repair. Let me give you my reasons for this faith, and then please allow me to listen while you show me wherein I am wrong, or confirm my prepossessions by your own corroborative testimony. Do not then understand me as speaking dogmatically when I propose the following methods in teaching anatomy, but only as offering suggestions.

Our sole reason for examining tissues and organs is that we may learn their action and function. Hence, we should begin with function. This requires that the preliminary examination should be of the system, and not of its organs. The study of anatomy, then, should commence with a general examination of the body as a whole. In a dental school the first year should be devoted to general anatomy, beginning with osteology, or the frame-work. Then the viscera should be taken up, and their general morphology and function should be studied. This should be followed by myology, syndesmology, and neurology, that a fair idea of the whole body may be obtained. Practical anatomy should be commenced this term, and one extremity dissected. It has sometimes been urged that the student should not dissect until he has learned something of anatomy. This argument would be cogent if the object were to learn how to dissect. But we dissect to learn anatomy, and do not learn anatomy to discover how best to dissect.

All the study of this year should be general. Not a hint of any specialty should be given, and hence the teacher for this year is preferably a medical man. If he is a dentist, he is apt to introduce his specialty too early. The general study of the human body should be finished in the freshman year.

In the second, or junior year, the student begins to differentiate in his study. He should now take up regional anatomy. He has finished the study of the body as a whole. Not that he has learned all that he should, but he has devoted all the time that can be spared out of a three years' course, and he takes up the study of the part to which he is to devote his attention as a specialist. His field is bounded below by the clavicle, and he must have a special, definite, intimate knowledge of all above that.

As a part of this he commences the study of dental anatomy. The first step in this is comparative dental anatomy,—that is, the study of the dental organs as a whole, precisely as he began the first year in general anatomy. The dentist who learns nothing of the general relations of the teeth, and whose comprehension of them is only that they are organs out of which he is to pick his living, cannot claim any scientific knowledge. The teeth in all the different classes of animals should be generally studied, until the dentition of man is reached, when his teeth should be intimately studied in all their anatomical relations. The anatomy of the second or junior year is, as a whole, devoted to organs, as is that of the first year to systems.

No man can finish the anatomical studies necessary to dental practice in two years. He imperatively needs the third year, and this should be given up to careful examination and investigation of tissues. In this year the microscope is a necessary adjunct. The student has now learned enough of function to comprehend how it modifies, or is modified, by structural development. In this third and finishing year he does not entirely confine his attention to histological anatomy, but he continues regional anatomy, because he is not yet sufficiently familiar with the organs, especially of the head. He also bestows considerable attention upon surgical, and morbid, or pathological anatomy. But his chief attention is given to structural, or histological anatomy, and he thus finishes his course by attention to the minutiæ and detail for which he is unprepared during his first or second year, because he has not then the general knowledge to allow him fully to comprehend it, and because his mind usually is not sufficiently trained and disciplined to give him mastery over his attention.

The student who thus advances by regular gradations each year, separately taking up and mastering a definite branch or part of the subject, will be likely to retain his knowledge, because he has advanced toward it by a direct route, and because each division is made subsidiary to the next, and there is a regular gradation and progress.

If such a system, or if some other regular system, can be adopted in its general features by all of our schools, the grading of one who for any cause changes his college during his course will be greatly facilitated, and he will not be likely to miss any of the subdivisions. Our graduates will be better qualified for practice, and the tone of the profession will be elevated.

I would pursue the same general plan in the study of chemistry and physiology, the other basal studies of the theoretical curriculum. They should extend through the entire course, the last year in each to be devoted to special instruction adapted to an exclusive dental practice.

Materia medica should begin with the first year, but therapeutics cannot be profitably commenced until the student has obtained some knowledge of drugs, and hence it becomes a second and third-year study, materia medica extending over the first two years.

Embryology properly belongs to the second year, because its study demands an acquaintance with technical terms that are all unfamiliar at the outset, and because it is an intricate and involved matter which requires a disciplined attention. Aside from these, there is no reason why it might not be begun with the freshman year.

Metallurgy is a second-year study, because its consideration demands a good acquaintance with general chemical laws, and these are acquired during the first year.

Surgery is a third-year study, because it demands not only a complete knowledge of anatomy, but a trained hand and absorbed attention as well. The student should begin the study of surgical pathology in the second year, and it may perhaps form a part of his general pathological studies.

Pathology should be differentiated from operative dentistry. They have very little in common, save that each may be curative. But operative dentistry is wholly mechanical and manipulative, while pathology should cover all medicinal and general treatment. Operative dentistry is largely prophylactic, while pathology is so to but a slight degree. Whatever has to do with the action of drugs, whether generally or topically applied, belongs to pathological practice. In the treatment of alveolar abscess, for instance, operative dentistry has very little part, its practice being confined to that which is mechanical, or that which is done with instruments. I believe that in the past we have not sufficiently distinguished between the two. A sharp line of demarkation should be drawn between that which is mechanical and that which is therapeutical.

It will be seen that I have not attempted to assign any place to the practical part of dentistry. My subject was the teaching of anatomy, but I have thought it not inappropriate to suggest some thought concerning other didactic studies.

Let me repeat that I have only considered the matter tentatively, and realize as fully as any of you that there is room for much consideration and extended discussion before the various studies in our curriculum shall each have been definitely assigned its appropriate place.

## NATIONAL ASSOCIATION OF DENTAL FACULTIES.*

The fourteenth annual meeting of the National Association of Dental Faculties was held at the Hygeia Hotel, Old Point Comfort, Va., commencing Friday, July 30, 1897.

The following members of the Association were represented as noted below:

*Alabama Dental College*, Birmingham, Ala.—T. M. Allen.

*University of California, Dental Department*, San Francisco, Cal.—L. L. Dunbar.

*Columbian University, Dental Department*, Washington, D. C.—J. Hall Lewis.

*Howard University, Dental Department*, Washington, D. C.—A. J. Brown.

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*The above was received too late for our September issue, the matter for that issue being in type at the time of its reception.—Ed.

*National University, Dental Department*, Washington, D. C.—J. Rowland Walton.

*Atlanta Dental College*, Atlanta, Ga.—William Crenshaw.

*Dental Department of Southern Medical College*, Atlanta, Ga.—S. W. Foster.

*Chicago College of Dental Surgery*, Chicago, Ill.—T. W. Brophy, Louis Ottofy.

*Northwestern University Dental School*, Chicago, Ill.—Theodore Menges.

*State University of Iowa, Dental Department*, Iowa City, Iowa—W. S. Hosford.

*Louisville College of Dentistry*, Louisville, Ky.—H. B. Tileston.

*Baltimore College of Dental Surgery*, Baltimore, Md.—M. W. Foster.

*University of Maryland, Dental Department*, Baltimore, Md.—F. J. S. Gorgas.

*Boston Dental College*, Boston, Mass.—J. A. Follett.

*Harvard University, Dental Department*—Thomas Fillebrown.

*Dental College of the University of Michigan*, Ann Arbor, Mich.—J. Taft.

*University of Minnesota, Dental Department*, Minneapolis, Minn.—W. P. Dickinson.

*Kansas City Dental College*, Kansas City, Mo.—J. D. Patterson.

*Western Dental College*, Kansas City, Mo.—D. J. McMillen.

*Marion-Sims College of Medicine, Dental Department*, St. Louis, Mo.—J. H. Kennerly.

*Missouri Dental College*, St. Louis, Mo.—A. H. Fuller.

*University of Buffalo, Dental Department*, Buffalo, N. Y.—W. C. Barrett.

*New York College of Dentistry*, New York City—F. D. Weisse, J. Bond Littig.

*Cincinnati College of Dental Surgery*, Cincinnati, Ohio—G. S. Junkermann.

*Ohio College of Dental Surgery*, Cincinnati, Ohio—H. A. Smith.

*Western Reserve University, Dental Department*, Cleveland, Ohio—George H. Wilson.

*Pennsylvania College of Dental Surgery*, Philadelphia, Pa.—C. N. Peirce.

*Philadelphia Dental College*, Philadelphia, Pa.—S. H. Guilford, Leo Greenbaum.

*University of Pennsylvania, Dental Department*, Philadelphia, Pa.—James Truman.

*Tennessee Medical College, Dental Department*, Knoxville, Tenn.—R. N. Kesterson.

*Central Tennessee College, Meharry Medical Department, School of Dentistry*, Nashville, Tenn.—G. W. Hubbard.

*University of Tennessee, Dental Department*, Nashville, Tenn.—J. P. Gray, L. G. Noel.

*Vanderbilt University, Dental Department*, Nashville, Tenn.—H. W. Morgan.

*University College of Medicine, Dental Department*, Richmond, Va.—L. M. Cowardin.

*Royal College of Dental Surgeons*, Toronto, Canada—W. E. Willmott.

The following schools were elected to membership:

*Milwaukee Medical College, Dental Department,* Milwaukee, Wis., represented by Reinhold E. Maercklein.

*Tacoma Dental College,* Tacoma, Wash., the constitution being signed by proxy by Dr. Kennerly.

*New York Dental School,* New York City, represented by John I. Hart.

*Ohio Medical University, Dental Department,* Columbus, Ohio, represented by J. F. Baldwin.

*Baltimore Medical College, Dental Department,* Baltimore, Md., represented by J. W. Smith and William A. Montell.

The application for membership of the University of Omaha, Dental Department, was laid over till next year, at the request of its officers.

Applications for membership were reported by the Executive Committee from the Pittsburg Dental College, Pittsburg, Pa.; Dental Department of the College of Physicians and Surgeons, San Francisco, Cal.; Colorado School of Dentistry, Denver, Col.

The following report laid over from last year was adopted:

> "Your committee on choosing a color respectfully report that they have decided to recommend the standard lilac as the distinctive dental color, and they recommend the adoption of the academic costume according to the requirements observed by the intercollegiate system."

The resolutions laid over from last year, making the annual college term seven full months, and recommending that the annual meetings be held in connection with the National School of Dental Technics, and at a time of the year when the colleges are in session, were negatived.

A committee consisting of Drs. Henry W. Morgan, M. W. Foster, Theo. Menges, C. N. Peirce, and H. A. Smith, was appointed to meet a similar committee from the National Association of Dental Examiners, for the purpose of harmonizing the differences of opinion between the two associations. This committee reported rules which had been agreed upon by the two committees.

The report was discussed at length and again referred to the committee, which later reported, through the Executive Committee, a resolution, which was adopted, providing for the codifying and arranging of the existing rules of the association, and the preparation of such additional rules as may be deemed advantageous to both organizations in advancing the standard of dental education in the United States. On motion, the committee which had had the matter in charge in the conference was continued for this purpose.

A communication from the Dental Department of the State University of Iowa was received, asking consent of the association to its conferring the honorary degree on Dr. F. P. Weber, of Cherokee, Iowa. The request was declined on the ground that it is contrary to the practice of the association.

A similar communication from the University College of Medicine, Dental Department, Richmond, Va., asking the privilege of conferring the *ad cundem* degree on Dr. Thomas G. Cowardin, of London, Eng., was refused upon the same grounds.

The rule regarding preliminary qualifications adopted in 1896 was declared to have been adopted in an unconstitutional manner, and was therefore rescinded. The following was adopted in its place, and by unanimous consent was ordered to go into effect at once:

> *Resolved*, That the minimum preliminary education requirement of a college of this association shall be a certificate of entrance to the first year of a high school or—in states that have no high school—of graduation from a grammar school, or its equivalent, to be determined by an examination.
>
> *Resolved*, That nothing in the above shall be construed to interfere with colleges of this association that are able to maintain a higher standard of preliminary education.

A communication was read from Dr. W. Mitchell, president of the American Dental Club of London, requesting the appointment of a committee to co-operate with a similar committee in Europe for the purpose of securing just recognition of the diplomas issued by the colleges belonging to the association. The communication was favorably considered, and the president appointed as the committee Drs. W. C. Barrett, D. J. McMillen, S. H. Guilford, A. H. Fuller, and Faneuil D. Weisse.

The Ad Interim Committee reported that one new question decided by them during the year was that a student who was in arrears for fees could not be accepted by another college if objection was made by the college to which he was indebted. This ruling was sustained by vote of the association.

The committee also recommended that steps be taken to secure definite knowledge as to the curricula and requirements of foreign colleges, so that the members of the association should be able to decide upon the standing of students coming from them. Referred to the committee appointed to consider the matter of Dr. Mitchell's letter.

A paper prepared by Dr. W. C. Barrett, Buffalo, N. Y., at the request of the Executive Committee, and entitled "The Study of Anatomy," was read by its author.

The paper was, on motion, directed to be incorporated in the official report and copies sent to the journals for publication.

A committee, consisting of Drs. S. H. Guilford, Theo. Menges, and M. W. Foster, was appointed to select persons to prepare papers on subjects connected with the work of the association, to be read before the next meeting.

Dr. Barrett offered the following, which was adopted:

> *Resolved*, That the final vote upon the admission of a college to this association shall not hereafter be taken unless a duly certified and qualified delegate is in attendance.

The following resolution, offered by Dr. L. L. Dunbar, was adopted:

> *Resolved*, That in order to maintain a reputable standing in this association no college under its jurisdiction shall permit any member of its faculty or teaching staff, board of trustees, or stockholders to serve in a judicial capacity as a member of a state board of examiners.

Dr. Taft offered the following, which was adopted:

> *Resolved*, That a committee of three on curriculum be appointed, whose duty it shall be to compare the schemes of study of the various dental colleges, with the view of harmonizing these schemes and making them as nearly alike as practicable, to report next year.

The Committee on Text-Books recommended the following:

Essig's "American Text-Book of Prosthetic Dentistry."

Hodgen's "Dental Metallurgy."

Schafer's "Essentials of Histology," fourth edition.

Abbott's "Principles of Bacteriology," third edition.

Gray's "Anatomy," last edition.

Luff's "Manual of Chemistry."

Burchard's "Compend of Dental Pathology and Therapeutics."

The report was adopted, and the committee was instructed to examine Kirk's "American Text-Book of Operative Dentistry," and Marshall's "Injuries and Surgical Diseases of the Face, Mouth, and Jaws," and forward their views at the earliest possible moment to the secretary, in order that they may be incorporated in the printed Transactions.

A committee, consisting of Drs. M. W. Foster, William Crenshaw, and L. G. Noel, reported appreciative resolutions on the death of Drs. Frank Abbot and Francis Peabody, late members, who have died since the last meeting was held. The resolutions were adopted:

The following lie over for final action till next year:

Offered by Dr. H. W. Morgan, seconded by Dr. H. B. Tileston:

> *Resolved*, That on and after the session of 1899-1900, the regular sessions of each college belonging to this association shall be extended to four years.

Dr. J. Taft moved to amend the constitution to require applications for membership to be sent to the secretary of the Executive Committee instead of to the secretary of the association.

Offered by Dr. T. Fillebrown:

> *Resolved*, That no college connected with this association shall confer any degree as honorary which is usually granted in due course of study and examination. All former rules on the subject are hereby repealed.

Offered by Dr. Barrett:

> *Resolved*, That after the regular session of 1898-9 the annual college term for the members of the association shall be seven full months.

Dr. Crenshaw moved to strike out Rule 3 and adopt the following instead:

> *Resolved*, That the time in which students can enter schools of this association shall be the first ten days of the session of the school, dating from the time announced in its catalogue.

The following were elected officers for the ensuing year: T. W. Brophy, Chicago, president; D. J. McMillen, Kansas City, Mo., vice-president; J. H. Kennerly, St. Louis, Mo., secretary; H. W. Morgan, Nashville, Tenn., treasurer. J. Taft, Cincinnati; Thomas Fillebrown, Boston, Mass.; B. Holly Smith, Baltimore, Md., Executive Committee. James Truman, Philadelphia; F. J. S. Gorgas, Baltimore; J. Hall Lewis, Washington, D. C., Ad Interim Committee.

The newly-elected president, on being installed, announced the following appointments: J. A. Follett, Boston, Mass.; H. A. Smith, Cincinnati, Ohio; L. L. Dunbar, San Francisco, Cal.; J. D. Patterson, Kansas, City, Mo.; W. T. McLean, Cincinnati, Ohio, Committee on Schools. S. H. Guilford, Philadelphia, Pa.; William Crenshaw, Atlanta, Ga.; W. C. Barrett, Buffalo, N. Y.; W. P. Dickinson, Minneapolis, Minn.; Faneuil D. Weisse, New York City, Committee on Text-books. J. Taft, Cincinnati, Ohio; Edward C. Kirk, Philadelphia, Pa.; A. H. Fuller, St. Louis, Mo., committee to select subjects and essayists for next meeting.

Adjourned to meet at the call of the Executive Committee.

# SELECTED ARTICLES.

## COMPOUND CEMENT AND AMALGAM FILLING.

By Dr. H. Baldwin, Eng.

The *modus operandi* is as follows: The cavity should be excavated with the usual care as regards removal of the decay, but the amount of undercutting which is necessary is very much less than for either amalgam or gold. The cavity should be thoroughly dried. The amalgam should first be mixed and of a convenient sort of consistency. The cement should then be mixed and of a decidedly thin consistency, not much thicker than would be used for fixing crowns. The cavity should then be filled with the cement, preferably by means of the same spatula as has been used for mixing it. Then immediately a large piece of the amalgam should be pressed into the cement, and, by means of a smooth, rounded instrument, should be driven home, working from the center to the circumference, and so expressing much of the cement on all sides. The edges of the cavity should then be quickly cleared of both cement and amalgam, by means of spoon or other excavators, till not a trace of anything is left at any of the edges, especially at the cervical edge, if the cavity is an interstitial one. This obviates the danger of getting the cement exposed on the surface when the work is finished. The remaining cavity should then be filled up with pure amalgam carrying it down to the cervical edge in small pieces, with perhaps a trifle more mercury added so as to ensure its going down completely, and then finishing with harder amalgam and squeezing with bibulous paper in the well known way. A matrix should be used in large composite cavities and may be applied either before commencing to fill or immediately after packing the first pieces of amalgam and clearing the edges. Putting on the matrix after clearing the edges keeps the matrix clean and free from cement.

Cavities for which this composite filling is suitable are practically all those which are generally considered suitable for amalgam alone; many cases which are generally considered suitable for cement alone, and in addition many which would otherwise be suitable only for gold. All large interstitial cavities in molars and bicuspids and crown cavities which are fit to receive a hard filling at all may with propriety be filled by this method. There is little in common between a filling of this sort and an ordinary amalgam filling. Ordinary amalgam as a filling material is open to many objections which the combination is entirely free from, and the combination presents a number of merits which belong to it alone. Thus, to compare it, point by point, with gold or amalgam: (1) it requires a much smaller sacrifice of healthy tooth substance; (2) it leaves a stronger tooth; (3) it necessitates much less pain in excavating; (4) valuable time is saved in excavating; (5) it interposes a non-conducting layer between the sensitive dentine and the metal; (6) it adheres to the cavity; (7) it is more water-tight; (8) compared with amalgam, at all events, it does not stain the tooth, nor show through the thin enamel of a nasty color, and (9) it is quickly done.

I venture to submit: (1) that all cement fillings in back teeth which we so often meet with as permanencies would be better treated by coating the cement with amalgam in this way; (2) that most teeth which are filled with cement as a trial for a temporary purpose would be better filled as a permanency in this way. Where the cement will be tolerated this combination will equally be tolerated, and whereas it is exceedingly difficult often to pack simple cement tightly against the cervical portion of a deep interstitial cavity it is easy, by means of the amalgam, to drive the cement well home. In passing, I would like to give it as my opinion that the supposed tendency of cement to undergo specially rapid solution at the cervical edge does not exist. The disappearance of the cement and appearance of a cavity in this situation is due to the cement never having been in absolute apposition with the tooth at the point, or to the decay there never having been thoroughly removed. The difficulty of packing plain cement at that point is not, I fancy, generally realized, and lies not only in the remoteness of the situation, but in the fact that a little moisture frequently bedews that part, and that the gum presents a prominent and possibly overhanging edge, which edge, when pressed on, is especially liable to give forth a serous or sanious oozing; (3) that nearly every amalgam filling would be improved by being inserted in this way: I have used this method with gradually increasing frequency since my early days of practice, thirteen years ago, and to-day I hardly ever put in an amalgam without the preliminary adhesive stratum of cement. Of course, care and neatness are necessary in this as in every dental operation, and it does not do to leave a layer of cement outcropping at the edges.—*British Journal.*

# REMOVAL OF PULPS.

## By Dr. F. J. Fesler, Lowell, Mass.

Take a test-tube in which ten grains of muriate of cocaine have been placed, and add one dram of distilled water, then bring to a boil, cool and place in a vial for use. Put the rubber dam over the tooth to be operated on and tie it, or in some way make it so tight that none of the solution will go through into the mouth or on the gum. A clamp is the most reliable to prevent displacement by any sudden movement of the patient. If the pulp be alive and not exposed, so that it cannot be readily reached with a hypodermic needle, take a small drill the same size as the needle, and open just to the pulp. Then take into your syringe a quantity of the cocaine solution and place one or two drops in the cavity in such a way as to numb the pulp to the entrance of the needle. This can usually be accomplished in one or two minutes, so that but a very little pain will be felt on entering the needle, say a thirty-second of an inch into the pulp. This may also be accomplished by touching the exposed pulp with a ninety five per cent. solution of carbolic acid.

After entering the needle, use gentle pressure, injecting the solution and pushing the needle further into the pulp as fast as sensation is lost. The whole operation of anesthetization may be completed in three to five minutes, so that a hook broach can be carried to the end of pulp canal and turned around, thus amputating the pulp, to be afterward removed with a barbed broach, by a broach wound with cotton, or in any way you may see fit. Any hemorrhage may be stopped with carbolic acid.

I am in the habit of filling my hypodermic syringe, then place it in position, the needle point just at the entrance to the canal, and while it is held in that position place enough of Gilbert's temporary stopping, which has been previously warmed, around it to fill the cavity. This is applicable where the nerve is nearly dead, receded, or the cavity is so large as to allow much of the liquid to flow back and so not enter the pulp. It will be found necessary where the pulp extends to two or more roots, so that enough pressure from the syringe may be exerted to force the solution throughout them all, or each root may be treated separately. Each will present conditions requiring slight differences in manipulation.

The filling may be inserted at once where the pulp has been immediately exposed and removed, or where the upper half of the pulp was healthy when removed, though it might be well to treat with a little carbolic acid or other antiseptic. Many, particularly lateral incisors, present so little space to anchor a temporary filling that this method is far preferable, and as the permanent filling can be immediately inserted, considerable experiment is warranted. If the least suspicion of a large apical foramen be present none of the material should be carried through into the surrounding tissues.

Had I known the benefits to be derived from this method years ago it would have been a priceless boon to me, besides being a great saving of time and pain to my patients.—*Dental Digest.*

## NON-COHESIVE GOLD.

### BY DR. D. J. MCMULLEN.

It is a fact that most of the crown and gingival cavities of molars and bicuspids are filled with amalgam because of the trouble of adjusting the rubber-dam and danger of moisture, the time required in inserting a cohesive gold filling, to say nothing of the protests of the patient against a "mouthful of rubber," dam clamps, and the discomfort of the mouth held open for a long time, the many unpleasant incidents we all know so well.

It is for these reasons, as much as upon the grounds of expense, that both dentist and patient so often compromise upon amalgam, in a majority of the cases. But with non-cohesive gold most of these cavities may be *well* filled, and nearly as quickly as with amalgam, the trouble and discomfort of the rubber-dam be avoided, and the work done equally as well as with cohesive gold, and the dentist extensively using non-cohesive gold finds his income materially increased thereby. But above all these things is the decidedly superior quality of work it leads up to, and the higher appreciation of dentist and dentistry in the community.—*Western Dental Journal.*

## THE IDEAL STUDENT.

What should be the qualities and attainments of this individual so far removed from us all, and who has, doubtless, never existed save in the speculative imaginings of vain dreamers? We consider the ideal as visionary. It must always be something higher and beyond us, for when once attained, it then ceases to be ideal and becomes a reality.

The ideal student is not always the man who has stood at the head of his class, year in and year out. Of course, it is well if he has;

but grade-marks and high averages are not infallible indicators of the thorough, practical student. Some of the world's foremost and most brilliant men have graduated at the foot of their class with little or no honor.

The student who nearer approaches this exalted estate is the one who has a purpose and who is firm and steadfast in his desire to be true to his own better nature and *do his duty* under all circumstances. This world has no room for the shirker. It encourages thrift and individuality. Individuality begets originality, and originality is the parent of genius. Thus one passes from one degree to another, the last point achieved being higher than the preceding one.

A man, narrow in mind, can never reach the ideal; he must be "broad" in his views. No student should confine himself too closely to the prescribed curriculum of his college. Seeking no information beyond the barren walls of the class-room has been the cause of many a blighted hope. The narrow man falls into a rut from which he finds it impossible to extricate himself.

Another important requirement of our ideal student is unselfishness. His future attainments depend largely, if not wholly, upon the effort he makes to be agreeable and companionable with his associates. Too many men, by sealing themselves within adamantine walls of their own selfishness, have crippled, seriously, their chances for success in life, and thus impaired their opportunities for advancement in their particular sphere of usefulness.

Further, the ideal student should be possessed with that priceless prerequisite to a successful career, energy. No man ever reached the plain of success who was lazy and lacked ambition. These two qualities, if I may be permitted to call them such, are as unlike as the death-like sluggishness of the stagnant pool, and the vigorous, irresistible rush of the mountain torrent.

The ideal is far from the majority of us. But those who still claim to be students of dentistry, though they hold diplomas of graduation, may strive in the prosecution of their efforts to be within hailing distance of this truly imaginative state, that has so long eluded our zealous courting.—*Dental News.*

## HOW TO BREATHE.

Maria Duncan, M. D., in *Progressive Age.*

It is of the utmost importance to accustom one's self when walking to frequent intervals of conscious breathing. No involuntary action of the body is habitually so carelessly performed—so almost shirked— as this one, and upon no other does our health so largely depend. The great majority of the human race keep their lungs in a state of semi-starvation; and diseases and ailments manifold can be traced to this cause alone, since the very act which deprives one of life giving oxygen also returns to the arteries impure blood, weighted with poisonous carbonic acid.

If the lungs be properly inflated, this act alone gives the body a buoyancy, which increases the pleasure and lessens the exertion of walking. Of course a mincing or languid step must be avoided. Take a free and firm, but light stride, balancing the upper part of the body alternately on each hip—but without swaying it perceptibly—and giving the impetus forward with a slight spring from the ball of the foot. Naturally, the mind will at first have to direct these motions, but the body responds delightfully to right ways of doing things, and if the exercise of walking can be taken where there is much of interest to divert one, it will be found a great advantage, for this ready and cheerful response of the entire body, when its muscles are thus called into harmonious action, imparts a sense of exhilaration which makes one feel more like a bird than anything else can until flying machines have become accomplished facts.

The lungs have their own muscular power, which, unfortunately, is not more than half developed. The simplest preparatory exercise is full, deep breathing. Draw in a long, deep breath, expanding the chest as fully as possible without straining either lungs or muscles. Retain the breath thus taken while you count ten; then, as slowly as possible, expel it. This conscious breathing will soon enlarge and strengthen the lungs, and the more frequently this conscious action can be made, the better for the lungs and health.

Remember in all breathing exercises that nature's avenue to the lungs is through the nostrils; provision is made in the nasal passage to catch impurities and foreign substances, which, if carried to the lungs, as when breathing through the mouth, are liable to cause serious trouble. The very best time to practice lung gymnastics is in the morning before dressing, and again at night, for the body should be free from all restraining clothing.

Stand erect, with chin down, and rise on the toes as you inhale; hold the breath for a few moments, so that the air may act on the whole surface of the blood, nourishing it, and at the same time taking up impure gases; then expel it forcefully and as completely as possible, coming down on the heels at the same time. Five minutes of this work night and morning will work wonders.

If a proper carriage of the body be retained in all the ordinary duties of life, whether sitting or walking, it will be found to greatly minimize the fatigue of daily duties. It is the throwing of double work on some muscles by leaving others in idleness that causes more than half the pain of back and limbs which women suffer. If you will walk up stairs properly, with figure erect, legs and joints flexible, breathe properly, it is a healthful exercise, which cannot harm even a feeble woman.

## THE IMPLANTATION OF STERILIZED ROOTS OF THE TEETH OF BEASTS, FOR CARRYING ARTIFICIAL CROWNS.*

By W. E. Walker, D. D. S., Pass Christian, Miss.

It is a deplorable fact that notwithstanding the great advancement made in the treatment of the various diseases of the oral cavity, occasionally a tooth is lost, in spite of all the best endeavors of the stomatologist to prevent such a calamity. It is therefore very desirable that we should be able to replace such lost organs, and often by other means than plate and bridge work.

I need therefore to make no apology for introducing the subjects of implantation and transplantation. Since the introduction of the operation of implantation by Dr. Wm. J. Younger, in 1885, various substitutes for the roots of human teeth have been suggested, for carrying artificial crowns—as lead capsules, porcelain teeth, double staples of mētals, etc. The literature on this subject does not indicate any marked degree of success with any of the manufactured roots.

As it is often a difficult matter to obtain a healthy root of a human tooth, suitable for this purpose, it has occurred to me that one might utilize the roots of the teeth of beasts, which are easily obtained from the slaughter-pen and which are, as a rule, free from disease, requiring, though, thorough sterilization. Before implanting they can be surmounted with Logan, or other crowns, a cast made of the mouth and bandage adjusted to cast by Dr. Jack's method, which I have found the most satisfactory.

While I have not found any beasts' teeth with roots very closely corresponding to those of human molars, this is immaterial, as the socket from which a molar has been removed requires remodelling, even to receive a human molar, for the roots of no two human molars are alike, and less cutting is necessary in using the large single root of a bovine central incisor; all that is demanded being the removal of the septum dividing the alveoli of the socket.

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*Abstract of paper read before the Dental Section, American Medical Association, Philadelphia, June, 1897.

I have examined a number of heads and find that while bovine central incisors are very well adapted to this purpose, it is not true of the laterals, at the age at which beef is usually slaughtered in this section of the country, the root of the lateral not being fully developed and the foramen very large.

This is not, strictly speaking, *implantation*, but a practical *transplantation*, which might be practiced by some who would hesitate to drill a socket in the molar region required for implantation, or who might be deterred by the difficulty of inserting a multi-rooted tooth.

I will not lengthen my paper by going into the details of removal of pulp, sterilization, canal-filling, adjusting artificial crowns, etc.

Any necessary variation in the procedure from what has been written on implantation and transplantation, will naturally suggest itself to any one who will take the trouble of reviewing the literature on the subject before undertaking the operation.—*Ohio Dental Journal.*

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## CATAPHORESIS vs. THE DIRECT APPLICATION OF THE GALVANIC CURRENT FOR OBTUNDING SENSITIVE DENTINE; AND HOW TO DO A PRACTICE THAT EXCLUDES BOTH.*

By W. G. A. Bonwill, Philadelphia, Pa.

What have I to say about cataphoresis? Is it a fact that a drug can be dissolved in water or any other media and be made to traverse the dentinal tubuli, enter the pulp chamber and produce an anesthetic or analgesic effect by osmosis? Or can it directly paralyze the sensitive dentine upon its surface and sufficiently deep to enable the operator to cut with impunity painlessly, as is claimed for most obtunders now found in the market? I should not attempt to quibble over osmosis or how or what does produce this supposed effect, but my long experience dating farther back than Dr. Richardson, of London, I think entitles me to ask what is the real agent in this wonderful discovery? There are so many means of influencing, not only the human being but all animals below man, so as to make them believe almost anything you wish even to the complete annulling of pain, that we must be wide-awake and very conversant with past history in this line, for us to say what agent has produced this so-called cataphoresis, or as with other pain annullers, what is the true philosophy or *modus operandi* in analgesis?

---

*Abstract of Paper read before the Dental Section American Medical Association, Philadelphia, June, 1897.

Osmosis must be established or all such assertions as have been made fail to convince. Osmosis, according to the best authorities, can only take place between two fluids of dissimilar natures or densities, or gravities where a porous membrane of tissue intervenes, or where a porous porcelain cup is used. Then the fluids will in a short time, without any electricity, become of the same strength or gravity. But how can you take the fluid containing cocain and pass it through a membrane that is not porous? Dentine is porous only when the tooth has been extracted and dried and is void of all organic matter. But so long as it is in the mouth it is full of fluid that is not interchangeable by osmosis, unless you can produce either in the pulp chamber or canal a different density to the fluids in the peridentium.

If equilibrium exist between this medium of dentine on either side of it, then there is a *statu quo* condition and no osmosis. You might as well tell me that a cup can be made of dentine to take the place of the ordinary porous porcelain or burnt clay cup in a Bunsen battery, and make of it a battery. Now, I assert that in 1856, I know I did do all this obtunding by the simple galvanic current without dam or any other adjunct. Why will you persist in this absolutely useless and unnecessary procedure in loss of time, demoralizing your patients, fooling away your own senses trying to believe you are doing something that was never done before and is superlatively superior to all that was ever done in the past history of dentistry?

It is all well enough to try to alleviate pain in any operation, but when all of this can be done without, and the patient is enabled to see that dentistry is not the inhuman thing dentists would have them conceive, and have them feel and know that they can be taught to bear all the pain consequent upon any operations on the teeth, in excavating or removing pulp, why should you not adopt means long ago in your grasp for the asking and taking? From the many experiments of others in electrical therapeutics, as far back as 1860, osmosis was proven to take place by a current of electricity through a porous membrane or diaphram, but never through bone either in a living subject or dead; and even when the osmosis was effected through a porous animal structure, or membrane, it was only done after many hours' action. Teeth were extracted in this city, by electricity, as early as 1859, but it was only by the shock produced at the instant the forcep was applied, producing a diversion of the will force by causing a sudden and violent inhalation into the lungs, and while the lungs remained inflated, the effect was good, for the senses were, for the instant, submerged or subjugated. From my use of the battery and catching on to its workings upon myself and patients, I found that the continuous current, or, when interrupted several thousand times a minute, would annul pain when directly applied to the excavating, and the negative pole on the face or in the hand, and with no dam or other agent. All of this work, however, was preceded by experiments directly upon myself in the use of chloroform. These experiments led to the discovery that chloroform could be taken to that extent that I could excavate my own carious cavities without pain and yet be sensible of the sense of touch and ability to perform the operation upon myself. Chloroform while it would do what I wanted, would make my patients too sick, and I had to abandon its use. It was then that the battery for extractions alone was first brought out in Philadelphia, and I have told you the philosophy of shock in its action on respiration. I soon had it so exemplified to the satisfaction of the patient, that, while electricity would annul pain in sensitive dentine, and living pulps (if not inflamed), could be removed, yet from the too strong application of the current it gave the patient such a severe shock while excavating that a violent inspiration was the result which led me to exclaim: "Nature's Anesthetic,'' and I then saw that it was diversion of the will power, for when the lungs were being inflated so violently the will could not take cognizance of actual pain. It was for the instant complete. Let any of you hurt a finger and how soon it is put into the mouth and a violent inhalation taken several times until pain is relieved. The infant in crying violently while in pain, from an accident, is relieved and falls to sleep from the constant sobbing and increased inspiration. All temporary teeth I extract by this method in one sudden inhalation or diversion of the will and not a tear or complaint. Two or three teeth can be extracted while the breath is held in the lungs. You now know why I abandoned electricity for obtunding sensitive dentine and extracting, for this revelation of how nature relieves. I am led to assert here to-day that all this cataphoresis in dentine, is only the work of the current pure and simple, and while I can annul pain in a few minutes by the current, I will not fool with it, as, by my present mode of practice, it is no longer worthy of my notice, and could you follow me day by day at the chair, you would adopt the means which would not rob you or your patient of that which neither can ever replace or have paid for remuneratively. I hold that it is all nonsense for you to practice deluding yourselves and robbing the public of valuable time, which, unless you get paid for every minute lost in the application of electricity by cataphoresis, you are a loser also.—*Ohio Dental Journal.*

## OBITUARY NOTICES.

### THE DEATH OF DR. FRANCIS PEABODY, OF LOUISVILLE, KY.

Whereas death has taken from among us, Dr. Francis Peabody, of Louisville, Ky., and whereas we feel that in his death the profession has sustained the loss of an able practitioner and teacher, therefore be it resolved that we tender to his bereaved family our heartfelt sympathy, and that we cause the resolutions to be entered upon the minutes of this Association, and be it further resolved that a copy of these resolutions be sent to the Dental Journals for publication.

### THE DEATH OF PROF. FRANK ABBOT OF NEW YORK, N. Y.

Whereas, death has removed from our ranks Prof. Frank Abbot of New York, and whereas on account of his social qualities, his genial companionship, and his ability as a practitioner and teacher of Dentistry, we realize the great loss to the profession in his death, therefore, be it resolved that we tender to his family the sincere sympathy of this Association, and request that these resolutions be spread upon the minutes of the Association. And be it further resolved that a copy of these resolutions be sent to the several Dental Journals of this country for publication.

# PROGRAM OF THE ROCHESTER DENTAL SOCIETY.

SESSIONS, 1897–98.

| Date, 1897 | Office of | Essayist. | Subject. | Discussion headed by | Office Incidents headed by |
|---|---|---|---|---|---|
| Oct. 19 | Dr. B. S. Hert | Dr. W. W. Belcher | "The Laboratory," . . . . . . . . . . . . . | Dr. W. W. Smith<br>Dr. J. H. Beebee | Dr. L. Requa |
| Nov. 16 | Dr. R. H. Hofheinz | Dr. F. J. Woodworth | "Advice to Patients," . . . . . . . . . . . | Dr. F. L. Sibley<br>Dr. L. Requa | Dr. J. S. Furner |
| Dec. 21 | Dr. C. T. Howard | Dr. C. H. Nicholson | "Temperament as Indicated by the Teeth," | Dr. I. C. Edington<br>Dr. W. A. White | Dr. B. S. Hert |
| 1898<br>Jan. 18 | Dr. C. F. Howell, | Dr. W. H. Barr | "New Remedies and Methods," . . . . . . . | Dr. F. J. Woodworth<br>Dr. L. H. Gilbert | Dr. F. M. Rood |
| Feb. 15 | Dr. J. E. Line | Dr. R. H. Hofheinz | "Cements and Gutta Percha," . . . . . . . | Dr. C. T. Howard<br>Dr. F. H. Lee | Dr. W. A. White |
| Mar. 15 | Dr. H. S. Mille | Dr. J. E. Line | "Pathological Changes in the Dental Pulp," | Dr. F. French<br>Dr. B. S. Hert | Dr. W. A. Windell |
| Apr. 19 | Dr. C. H. Nicholson | Dr. J. W. Cowan | "Gold and Alloys," . . . . . . . . . . . . | Dr. J. H. Beebee<br>Dr. L. H. Gilbert | Dr. R. Erler |
| May 17 | Drs. J. & L. Requa | Dr. F. A. Greene | "Fracture of the Sup. and Inf. Maxilla," . . | Dr. H. S. Miller<br>Dr. J. Requa | Dr. P. H. Smith |
| June 18 | Dr. J. W. Cowan | Dr. F. C. Howell | "The Year's Advancement in Dentistry," . . | Dr. C. H. Nicholson<br>Dr. H. N. Holmes | Dr. F. L. Sibley |

## OBSERVE.

First.—The place of meeting is to be held in alphabetical order of members

Second.—A list of subjects has been prepared and arranged as stated herein

Third.—Two members at each meeting are to head the discussion on the paper of the evening

Fourth.—A member at each meeting is to head the discussion under "Incidents of Office Practice"

Fifth.—A question box is to be started, open to all desiring information

Sixth.—The Essayist is required to send his paper to the members discussing it at least one week in advance of meeting. The Executive Committee expect to complete arrangements for two interesting special meetings during this winter's session

## MEMBERS:

Dr. W. H. Barr
Dr. J. H. Beebee
Dr. W. W. Belcher
Dr. J. W. Cowan
Dr. I. C. Edington
Dr. R. Erler
Dr. F. French
Dr. L. H. Gilbert, Vice-Pres.
Dr. J. S. Furner
Dr. F. A. Greene
Dr. B. S. Hert, Librarian
Dr. R. H. Hofheinz
Dr. H. N. Holmes
Dr. C. T. Howard
Dr. C. F. Howell
Dr. F. H. Lee
Dr. J. E. Line
Dr. H. S. Miller
Dr. C. H. Nicholson, Pres.
Dr. J. Requa
Dr. L. Requa
Dr. F. M. Rood
Dr. B. G. Saunders
Dr. F. L. Sibley
Dr. P. H. Smith
Dr. W. W. Smith
Dr. D. H. Waugh
Dr. W. A. White
Dr. W. A. Windell
Dr. F. J. Woodworth, Sec. and Treas.

# GENERAL INDEX FOR VOL. XI.

A Page

Artificial Teeth. The Construction of 1, 65
An Immediate and Painless Method of Removing Pulps 14
An Act of Dental Uncleanliness 10
Alcohol as an Antidote to Carbolic Acid 23
Asbestos, where found, and what it is 24
A New Treatment for Boils 26
A Simple Salt and Water Injection in place of Transfusion 27
A New Filling Material 32
A Point About Regulating Teeth 37
A Non-Toxic Local Anæsthetic 39
Alveolar Abscess. Treatment of 59
A Powerful Hemostatic 61
A Standard of Morality 62
Abstract of Lecture on Oral Surgery 81
American Medical Association 94
Aconite for Swollen Face 94
A Local Obtundent 96
After Pains of Extraction 96
Alloy and Cement Fillings 116
Arsenic for Sensitive Dentine 117
A Quickly Made Matrix for Cement, Amalgam and Gutta Percha Fillings 119
Arsenical Applications 128
Amalgam in Combination with Cement 145
Alveolar Abscess. Radical Treatment of Chronic 149
Applying the Rubber Dam, and Taking Impressions 157
A New Substitute for Gold 160
Anatomy. The Study of 168
Amalgam Fillings. Cement and 179
Antidotes for Poisons 109

B

Bookbinders' Glue 24
Boils. A New Treatment for 26
Book Notices 92, 122
Bleaching Teeth 105
Bad Breath 127
Boring Holes in Glass 158

C

Construction of Artificial Teeth. The 1, 65
Cataphoresis and Obtundents 11
Coating Casts for Vulcanite Work 12
Chloroform and Root Canal Treatment 22
Carbolic Acid. Alcohol as an Antidote to 23
Chloroform. A New Way to Administer 25
Citric Acid in Diphtheria 25
Cleaning the Hands 26
Cavity Margins. Preparation of 51
Cleansing Paste for the Hands 63
Cast. To Make a Perfect 63
Cataphoresis 107, 88
Cement. To Remove 94
Construction of Crown and Bridge Work. The 97, 129
Clouding of Mirrors. To Prevent 116
Chicago Dental Society 120
Correspondence 122
Correction 124
Cement for Setting Crowns 125
Cementing on Crowns 125
Clean Hands. To Keep 126
Catarrh or Caseosa Rhinitis 142
Cement. Amalgam in Combination with 145
Cataphoretic Extirpation of Living Pulps 148
Chloral Camphor 157

Page

Coating Cement Fillings. For 158
Compound Cement and Amalgam Fillings 179
Cataphoresis vs. the Direct Application of Galvanic Current for Obtunding Sensitive Dentine: and How to do a Practice that Excludes Both 186
Cavities. Some Notes on the Preparation of 78

D

Dental Students. Leading Questions and Answers for 6, 33, 136, 162
Diphtheria. Citric Acid in 25
Don't Hurry 28
Direction for the Use of Eucaine Hydrochlorate in Dentistry 30, 53
Destroying Nerves Painlessly 32
Devitalizing Agent. Where to Place the 56
Duplicate Models. Recipe for 94
Dentistry. History of 96
Deciduous Teeth. Salt for 160

E

Etherial Antiseptic Soap 13
Editorial Thoughts for the New Year 20
Eucaine Hydrochlorate in Dentistry. Directions for the Use of 30, 53
Editorial 91
Extraction. After Pains of 96
Eucaine for Painless Extraction and other Uses 108
Electrozone and Cocaine in Cataphoresis 128
Extirpation of the Living Pulp. Cataphoretic 148
Easily Nauseated Patients 157
Ether Anæsthesia and Nitrous Oxid 157
Etymology of Cadaver 159

F

Formula for Odontalgia 22
Filling Material. A New 32
Filling With a Matrix 57
For Cementing Bands to Crowns 96
For Coating Cement Fillings 158
Fistulous Tract. Treatment of 158

G

Glue. Bookbinders' 24
Gutta Percha 94
Gutta Percha Fillings 126
Guides to the Entrance of Root Canals in Difficult Cases 155
Gold. A New Substitute for 160
Gold. Non-Cohesive 182

H

Hints for the Laboratory 17
Hints to Advertisers (farcical) 21
How to Treat Sensitive Dentine 29
How Far Beneath the Gingiva Should a Band Extend 56
Hemostatic. A Powerful 61
History of Dentistry 96
How to Transfer Pictures 126
Headache. Treatment of 159
How to Breathe 183

I

Investing Material 26
Interesting Experience 57

Page
Is it Justice? . . . . . . . . . . . . . . . . 118
Impressions for Porcelain Inlays . . . . . 127
Iodine as an Obtundent . . . . . . . . . . 127
Impression Taking . . . . . . . . . . . . . 127
Impression Materials . . . . . . . . . . . 128
Illinois State Dental Society . . . . . . . . 93
Impression Trays. Simple Method of Cleaning . . . . . . . . . . . . . . . . 159

J

Johnston's Etherial Soap . . . . . . . . . 142

K

Keep the Hands Clean. To . . . . . . . . 126

L

Leading Questions and Answers for Dental Students . . . . . . . . 6, 33, 136, 162
Local Anæsthetic. A Non-Toxic . . . . . 39

M

Method of Treating Pulpless Teeth . . . . 49
Matrix. Filling With a . . . . . . . . . . 57
Morality. A Standard of . . . . . . . . . 62
Mirrors. The Clouding of Mouth . . . . . 141

N

New Way to Administer Chloroform . . . 25
New Local Anæsthetic . . . . . . . . . . 25
Nitrate of Silver in Root Canals . . . . . . 40
New Jersey State Dental Society . . . . . 121
National Association of Dental Examiners 122
Nitrous Oxid and Ether Anæsthesia . . . 157
National Association of Dental Faculties . 173
Non-Cohesive Gold . . . . . . . . . . . . 182

O

Obtundents and Cataphoresis . . . . . . . 11
Odontalgia. Formula for . . . . . . . . . 22
Obtundent. Iodine as an . . . . . . . . . 127
Obtunding Sensitive Dentine . . . . . . . 158

P

Pulpless Teeth. Method of Treating . . . 49
Preparation of Cavity Margins . . . . . . 51
Pay for Your Work . . . . . . . . . . . . 62
Preparation of Cavities. Some Notes on the . . . . . . . . . . . . . . . . . 78
Pulpitis. To Diagnose . . . . . . . . . . 87
Pyrozone . . . . . . . . . . . . . . . . . 89
Pulp Devitalization . . . . . . . . . . . . 96
Pennsylvania Association of Dental Surgeons . . . . . . . . . . . . . . . . 103
Poisons and their Antidotes . . . . . . . . 109
Plaster Casts. To Toughen . . . . . . . . 125
Pictures. How to Transfer . . . . . . . . 126
Porcelain Inlays. Impression for . . . . . 127
Pulp Devitalization with Cocaine . . . . . 128
Plaster Bowels and Cleaning same . . . . 141
Pulps. Removal of . . . . . . . . . . . . 181
Pulp Protection . . . . . . . . . . . . . . 128

R

Removal of Pulps. An Immediate and Nearly Painless Method of the . . . . 14
Root Canal Treatment. Chloroform and . 22
Removing Stains . . . . . . . . . . . . 159, 26
Regulating Teeth. A Point About . . . . 57
Root Canals. Nitrate of Silver in . . . . . 40
Rubber Dentures. To Refit . . . . . . . . 64
Radical Treatment of Chronic Alveolar Abscess . . . . . . . . . . . . . . . . . 149
Root Canals. Guides to the Entrance of in Difficult Cases . . . . . . . . . . . . 155
Removal of Pulps . . . . . . . . . . . . . 181

S

Page
Soap. Etherial Antiseptic . . . . . . . . 13
Stains. Removing . . . . . . . . . . . 26, 159
Sensitive Dentine. How to Treat . . . 96, 117
Simplified Treatment of Teeth with Exposed Pulps . . . . . . . . . . . . . . 41
Syphilis, with Special Reference to the Relations of the Dental Profession to the Disease . . . . . . . . . . . . . . . 44
Systemic Medication for the Relief of Sensitive Dentine . . . . . . . . . . . 53
Some Notes on the Preparation of Cavities . . . . . . . . . . . . . . . . . 151, 78
Swollen Face. Aconite for . . . . . . . . 94
Setting Crowns. Cement for . . . . . . . 125
Submarine Gold Fillings . . . . . . . . . 143
Sensitive Dentine . . . . . . . . . . . . . 153
Saliva. To Check the Excessive Flow of . 159
Simple Method of Cleaning Impression Trays . . . . . . . . . . . . . . . . . . 159
Salt for Deciduous Teeth . . . . . . . . . 160

T

The Construction of Artificial Teeth . . . 1, 65
Taking Impressions . . . . . . . . 156, 127, 26
Treatment of Teeth with Exposed Nerves. Simplified . . . . . . . . . . . . . . . 41
The Kind of Patients Wanted for Students 55
Treatment of Alveolar Abscess . . . . . . 59
Thermometers . . . . . . . . . . . . . . . 61
To Make a Perfect Cast . . . . . . . . . . 63
Tooth Washes . . . . . . . . . . . . . . . 63
To Refit Rubber Dentures . . . . . . . . . 64
To Diagnose Pulpitis . . . . . . . . . . . 87
The Stomatologist . . . . . . . . . . . . . 92
To Remove Cement . . . . . . . . . . . . 94
The Construction of Crown and Bridge Work . . . . . . . . . . . . . . . . 97, 129
To Prevent the Clouding of Mouth Mirrors 116
The Penn Dental Journal . . . . . . . . . 125
To Toughen Plaster Casts . . . . . . . . . 125
To Grind Down Teeth Painlessly . . . . . 125
To Remove Remnants of Pulp . . . . . . . 126
To Keep the Hands Clean . . . . . . . . . 126
The Clouding of Mouth Mirrors . . . . . . 141
The Preparation of Cavities. Some Notes on . . . . . . . . . . . . . . . . . . . 151
Taking Impressions and Apply the Rubber Dam . . . . . . . . . . . . . . . . 157
To Line Red Rubber Plates with Black Rubber . . . . . . . . . . . . . . . . . 158
Treatment of Fistulous Tract . . . . . . . 158
To Check Excessive Flow of Saliva . . . . 159
Treatment of Headache . . . . . . . . . . 159
The Clouding of Mouth Mirrors Again . . 161
The Study of Anatomy . . . . . . . . . . 168
The Ideal Student . . . . . . . . . . . . . 182
The Implantation of Sterilized Roots of the Teeth of Beasts for Carrying Artificial Crowns . . . . . . . . . . . . . . 185
The Death of Dr. Francis Peabody, of Louisville, Ky. . . . . . . . . . . . . . 189
The Death of Prof. Frank Abbot, of New York, N. Y. . . . . . . . . . . . . . . 189

U

Uncleanliness. An Act of Dental . . . . . 16
Union of the American and Southern Dental Associations . . . . . . . . . . . 73
University of Buffalo. Dental Department 120

V

Vulcanite Work. Coating Casts for . . . . 12

W

What is Asbestos, and Where Found? . . 24
Where to Place the Devitalizing Agent . . 56

THE
Dental Office and Laboratory.

FOURTH SERIES.

VOL. XII. PHILADELPHIA, JANUARY, 1898. No. 1

# THE CONSTRUCTION OF CROWN AND BRIDGE WORK.

BY THEODORE F. CHUPEIN, D.D.S., Philadelphia, Pa.

[THIRD PAPER.]

In our two former papers we described the construction of the *Face plate* and the *Collar crown.* We propose in this to describe the construction of the *Ferrule or Richmond Crown.* The root end to which the ferrule is to be fitted is first prepared. Should there be much of the crown standing, as shown by Fig. 39, it would not be well to attempt the removal of the remains of the crown by cutting it off with the excising forceps, for by so doing there is a risk of splitting the root; but the crown should be removed by cutting it with a small, thin, corrundum disk, in the direction indicated by the mark A. The root is still farther reduced almost to the level of the gum by means of stump corrundum or carborundum wheels. After the stump wheels have been used on the face of the root, the root is made level by means of the facers, Fig. 40.

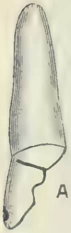

FIG. 39.

The facers will leave the root very much in the condition shown by Fig. 41. In this condition it would be impossible to accurately fit a ferrule, so that the flaring edges must be reduced to parallel sides like Fig. 42. Various devices have been suggested, and put on the market by manufacturers, to accomplish this. The enamel remaining on the root end is peeled off. This is sometimes quite difficult to do. The enamel is crushed by means of *glass-hard steel instruments* somewhat in shape like Fig. 43. The enamel is crushed or powdered, and the root end, above the gum, is rendered parallel by means of German dentated enamel fissure burs, or so-called "cross-cut burs." Other

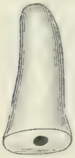

FIG. 41.

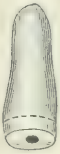

FIG. 42.

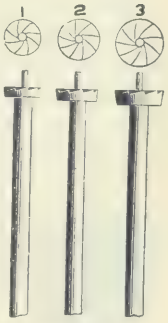

FIG. 40.

instruments for accomplishing this have been suggested by Dr. Starr, Dr. Chase, Dr. Weinich, Dr. Howe, Dr. Mitchel and Dr. Sweeny. With Dr. Sweeny's device, which is illustrated by Fig. 45, the flaring part of the root may be cut down by inserting one of the German dentated enamel burs into the nose of the hand-piece, placing the points into the hole in the root, and gradually reducing the root end, as shown by Fig. 42. The band is then fitted by twisting a wire around the root with a dentimeter, removing this, laying the measure on the end of a piece of wood, as shown by Fig. 46, driving it into the wood, and then cutting down the wood to the mark indicated by the wire measure. This plan will materially aid in accurately fitting the band. The band should be but a trifle wider than the thirty-second of an inch. In making these bands for encircling the roots, it is well that the lapped ends be chamfered, so that the double or lap may not be thicker than the rest of the band. The lap need not be more than the thirty-second of an inch. The best way to chamfer the ends of the band is to lay the ends on the face of the bench anvil and attenuate them by hammering, as shown by Fig. 47. Done in this way, the ends are chamfered more regularly than if done by filing. The bands are preferably made of seamless tubing, which can be procured of any size. The width may be obtained by sawing the seamless bands with a fine saw, in the Mechanical Saw Frame, Fig. 36, of September number, 1897. In order to do this sawing accurately, so that one part of the band may not be wider than the other, a pair of dividers are used ; one point of the dividers resting on the edge of the seamless tube, while the other scratches the tube around its entire circumference, indicating where the tube is to be sawed. This is shown by Fig. 48. If, however, the dentist is provided with a turning lathe, the tube may be secured in the drill chuck, and the band may be sawed, while revolving the lathe, of any width, and very accurately. The band being constructed and fitted, it is placed on a piece of plate and soldered to it, in this way forming a cap or cover

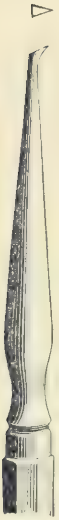

FIG. 43.

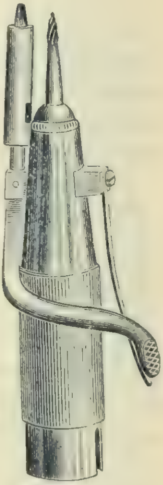

FIG. 45.

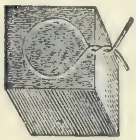

FIG. 46.

FIG. 47

to place over the root end. When thus constructed, the surplus plate is cut and filed away even to the edges of the band.

Most devices simply prepare the root end, and while they may accomplish this well or indifferently, the operator is obliged afterwards to fit the ferrule to the root. This is accomplished only after numberless trials, being painful to the patients in trying the fit, while in these trials the fingers and ferrule are unavoidably covered with blood, making the operation disagreeable and unsatisfactory. With Dr. Hovestadt's system, none of these drawbacks hamper the operator or disturb the patient. By a series of trephines, each smaller than the other, the root end is so reduced that the little seamless caps and ferrules, made mathematically the same size as the trephines, fit over the end of the root, reducing not only the pain, but the time, the blood flow, and all the other disagreements of the ferrule crown system.

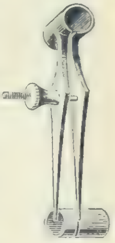
FIG. 48.

When the root end has been brought down to the level with the gum, it is then made level with the facers (Fig. 40), after which a trephine is used, shown by Fig. 49. In using the trephine, one should be selected that will just take the least shaving from the circumference of the root, leaving a little shoulder beneath the free margin of the gum, as shown by Fig. 50. This will, to a great extent, conceal the band. The root canal should not be enlarged or changed in shape at the orifice. It should be made circular, and only sufficiently large to admit the pivot end of the trephine, as in Fig. 51. If the hole in the root end is cut oval; as shown by Fig. 52, the end of the trephine could not be held steady, and the trephine *would not cut true.* It is preferable to use the trephines *by hand*, rather than in the hand-piece of the engine, although there are provisions for using them by either means.

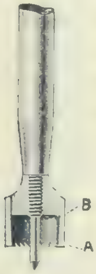

FIG. 49.

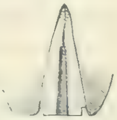
FIG. 50.

The root end being thus far prepared, the canal may now be reamed out to its full depth. For this purpose, it is well *to proceed slowly*, removing all debris by means of a fine probe, as it accumulates under the cutting tool. As much depth as can be should be obtained. In cuspid roots fully a half inch; in central and lateral incisors from a quarter to three eighths of an inch.

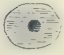
FIG. 51.

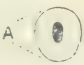

FIG. 52.

The greater the depth, the stronger the crown; yet in doing this, judgment must be exercised, as it would be much better to have less depth than run the risk of perforating the root at the foramen. By using the probe intermittantly, the full depth of the root may be secured without the danger of perforation. The root canal should be made slightly conical, as is shown in Fig. 50. For this purpose there are a number of instruments on the market, some devised by Dr. Ottolengui and Dr. Peso for this purpose. These conical reamers should not be used until the full depth of the root is secured, as they are intended only to enlarge, not to drill. A pivot is next filed conical (preferably by securing the wire in the chuck of the lathe) and fitted accurately into the root. The hole in root end is now countersunk with a large round bur. The cap is then placed on the root end, and the face of the cap is depressed into this countersink by pressing a ball burnisher on to it at this point. This will not only indicate *exactly* where the face of the cap is to be pierced for the dowel or pivot that is to pass into the root, but serves as a little cup where the solder unites the cap to the pivot, materially strengthening this foundation for the porcelain facing; and especially so should it be necessary to file off flush the protruding end of the pivot. An impression is now taken in plaster with the cap and pivot in position, the protruding end of the pivot serving to engage the plaster, so that it may be brought away *in the impression.* Before filling the impression with plaster, it is well to *nearly fill the cap with wax.* If this be not done, in endeavoring to remove the cap from the plaster model, the chances are that the plaster, which would have filled the cap, will be fractured, and thus the cap and pivot could not be replaced *in exactly* the same position which it occupied in the mouth; but by *nearly filling it with wax*, sufficient of the band of the cap will be indicated on the plaster model, as to enable the workman to replace it in exactly the same position which it occupied in the mouth.

The porcelain facing is then backed either with gold or platinum—we prefer the latter, as it can be made to fit closer to the back of the tooth. If the backing touch the protruding end of the dowel this may be cut off close to the cap, or filed away laterally to give room for the backing. The porcelain facing is then ground to fit very accurately against the cap. It may then be united with adhesive wax and tried on the root in the mouth, and if all be correct removed, invested and soldered.

In grinding these porcelain facings it will sometimes happen that

FIG. 53.

they will be too wide near the cap and will overhang. This may be corrected, *after soldering*, by grinding away the overhanging part and *polishing the porcelain* with the polishing wheel (Fig. 53), made for this purpose. To accomplish this well the lathe should be driven at a high rate of speed.

The finished crown is shown by Fig. 54.

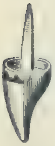

FIG. 54.

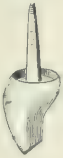

FIG. 55.

If the display of gold be objectionable, this may be concealed by using a platinum cap and dowel and a platinum backing, and soldering the dowel to the cap with *pure gold*, and fusing tooth-body over the front of the band, as well as using this to hold the tooth to the cap, instead of solder, as is shown by Fig. 55. This, of course, could only be done when the dentist is provided with one of the small furnaces used for crown and bridge work. This, we believe, is all the detail used in the construction of the " Ferrule or Richmond crown."

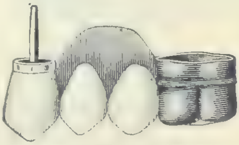

FIG. 56.

"All gold crowns " are rarely used on any of the six oval teeth, as the display of gold is too glaring for the taste of the majority. They are, however, frequently used over the bicuspids and molars *separately*, or as buttresses, for the support of the intervening teeth (the intervening teeth being called " dummies "), or in bridge work, as shown by Fig. 56. Sometimes, however, it is necessary to construct all gold crowns over the eye teeth to support the four lost incisors, cutting away the outer part of such crowns in order to conceal, as much as possible, the too great a display of gold, and making, what is termed, an open-faced or window crown. Such crowns may be constructed in several ways, which we will describe : The first procedure will be to dress down the tooth so that it will be no larger at the cutting edge than at the neck, as also on its occluding or palital surface, should the lower teeth strike it at this point, as also to allow for the thickness of gold which covers the tooth at this point. An impression in plaster of-Paris is then taken, which, after luting either with plaster or mouldine, to avoid the overflow of metal, yields a die, when fusible alloy is poured into it, as shown by Fig. 57. Wax is now placed around the entire circumference of the die so as to expose only one-half of it, when plaster-of-Paris is poured on. This takes the exact impression of one-half of the tooth. The wax is then removed, and guides are countersunk into the plaster, and plaster is poured on the first half. When these are separated we have two impressions, as shown by Fig. 58. These impressions are then coated with etherial soap, or any other parting material, paper is wrapped around each and plaster poured into each, thus giving the reverse, as shown by Fig. 59. When these four impressions have been thus obtained, paper is closely wrapped around each and fusible alloy poured into each, thus giving the workman a die and counter-die of each surface of the tooth. With these dies gold may be stamped up sharply into two halves, and the halves soldered together so as to form the crown. After soldering, the outer part of the crown is ground away by means of small corrundum wheels in the lathe, while the crown is held on the die, in order not to bend it, and in order to form the "open faced crown." The manipulation is attended with considerable detail and trouble, and the result not commensurate, as we have not found an open-faced crown thus constructed to be as strong as one constructed in another way, although we must say that the fit is perfect.

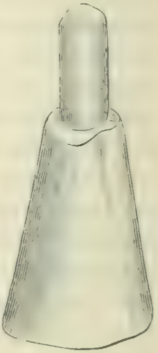
Fig. 57.

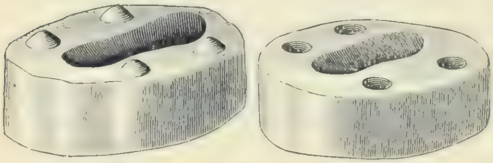
Fig. 58.

Another plan is to obtain a die, as shown by Fig. 57. Make a ferrule of gold, leaving it about one eighth of an inch higher than the die; drive this ferrule on the die by placing a flat piece of steel on it (so as not to mar the edges), as shown by Fig. 60, and then, by careful hammering, burnishing and snipping at different points, the top part of the ferrule may be brought in to make a pretty accurate fit against the labial and palatal faces of the tooth. The driving on of this ferrule will also indicate very accurately where the ferrule is to be filed, in order to fit it to the gum festoon. This forms a much stronger open-faced crown, with much less trouble, and subserving the purpose equally well if not better than the other plan.

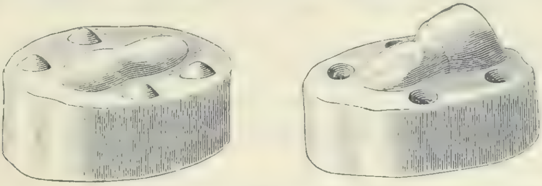

FIG. 59.

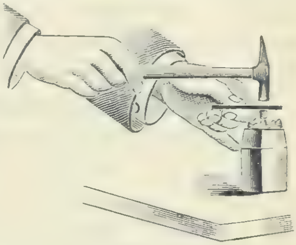

FIG. 60.

Still another plan has been suggested by Dr. Evans. A graduated series of dies are made from models and cast in zinc. These are laid on the moulding table and lead poured on so as to make counter-dies, which will be no deeper than A, Fig. 61. The gold for the crown is first cut to a circular piece, annealed and placed in the counter-die of No. 1. The die is brought against it and a concave disk is produced without wrinkles. It is again annealed and driven into No. 2, and so on until a hollow cone is produced like No. 4. A counter die is then made on a die like Fig. 57, when the cone of metal may be gradually driven up to an accurate fit.

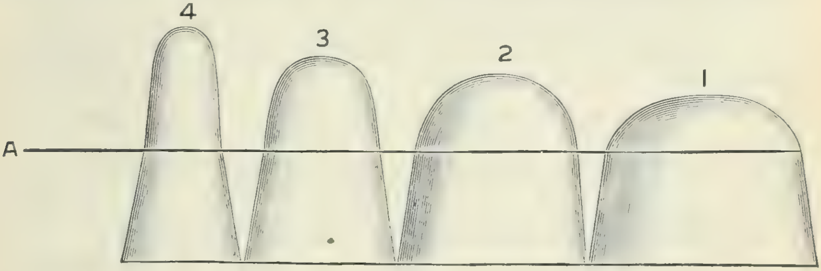

FIG. 61.

[TO BE CONTINUED.]

[THIRTY-SECOND PAPER.]

# LEADING QUESTIONS AND ANSWERS FOR DENTAL STUDENTS.

By Theodore F. Chupein, D. D. S., Philadelphia, Pa.

Q. Is the destruction of the life of the pulp due entirely to dental caries laying bare this organ?

A. By no means.

Q. To what other cause or causes is it due?

A. The life of the pulp is very slight, due only to the minute connection with other nerves and vessels at the foramen in the root, and a trifling disturbance at this point, by a blow, or by the too sudden or continuous force exerted by regulating appliances, would be sufficient to destroy its vitality.

Q. How do these circumstances act in causing its death?

A. By cutting off its sources of nourishment.

Q. Can you mention other causes which may lead to the death of the pulp?

A. The persistent use of the sandpaper disk in polishing fillings, the violent use of the separator in moving teeth in order to obtain room for filling them, the hammering in of wedges to keep teeth steady, while filling them may be instanced as some of the other causes which may lead to the death of the pulp.

Q. But is not the peridental membrane sufficiently elastic to admit of the movement of teeth without causing such results?

A. The peridental membrane is elastic to a certain degree, yet we know that a sudden force, or a pressure beyond this limit, will result disastrously: witness the sudden starting of a horse will break the traces, or the too great stretching of an elastic band will result in its rupture.

Q. How do these forces, acting on the peridental membrane, cause the death of the pulp?

A. By strangulating the vessels at the apex of the tooth.

Q. Does the tooth give any sign of devitalization immediately on the death of the pulp?

A. The tooth does not give immediate sign, but discoloration will ensue after a time, showing that this result was brought about by one or other of the causes we have mentioned. At other times congestion may promptly set in, and the tooth discolors rapidly.

Q. Is the death of the pulp from the causes you have mentioned confined to any time of life?

A. It is not, for accidents may occur at all times, as, for instance, a blow or a fall; yet we most frequently notice these sequences in childhood, when by playing, running, wrestling, etc., a fall or a blow may cause the death of the pulp; then again the regulating of the teeth is most frequently done in childhood or youth; hence, if the pulp be killed by the too rough usage of the appliances employed to effect the movement of the teeth, it may be traced to this, at this time of life.

Q. When the pulp is thus killed, does it result in pain?

A. It does not always result in pain, but it always results in discoloration. It may result in pain when congestion ensues from its death.

Q. What becomes of the pulp when killed by this strangulation of the vessels at the apex of the root?

A. The organ decomposes or becomes mummified, and this septic matter is gradually absorbed by the dentine of the tooth, to which is due its discoloration.

Q. Do these dead or discolored teeth give trouble?

A. Such teeth are known to remain comfortable for years without giving the least discomfort.

Q. Can their color be restored?

A. To a great extent this can be done.

Q. How?

A. By entering the pulp chamber and root canal, cleansing thoroughly, and using liberally 25 per cent. etherial pyrozone, which, by its large supply of oxygen, burns up all septic matter in the dentinal tubuli, and restores to a very great extent the normal color of the tooth.

Q. What do you understand by gangrene of the pulp?

A. It is a term used to denote the condition of the pulp when it is in the greatest stage of decomposition.

Q. What generally ensues when the pulp is in this condition?

A. Inflammation.

Q. What produces this mortification of the pulp?

A. It is produced either by the exposure of the organ by the progress of caries, or by the too sudden application of force.

Q. When the pulp dies and is confined within the contracted chamber of the tooth, does it always result in pain?

A. A pulp thus circumstanced does not always give pain, provided there be an outlet for the product of this decomposition. Pain ensues when from any cause this outlet becomes choked or stopped, whereby the egress is hindered.

Q. What is the product of this decomposition?

A. Generally pus or gas—sulphuretted hydrogen, a foul odor.

Q. How is periostitis produced?

A. When from any cause the aperture leading to a gangrenous pulp becomes closed, the irritation set up by the septic matter, on account of the pressure, becomes so excessive that the pericementum is involved and periostitis is the result.

Q. How may relief be given in such cases?

A. By removing the obstruction whereby the pus or gas may escape or find a vent.

Q. What produces a mummified condition of the pulp?

A. This condition may be produced when the pulp dies from the effect of the strangulation of the vessels at the apex of the root, or from capping an exposed or nearly exposed pulp with oxychloride of zinc.

Q. Were the efforts to allay the irritation caused by the impaction of food in the cavity of decay in a tooth, or of the capping of the exposed pulp generally successful?

A. They were not, for reason that the cause of the irritation in the first case was not well understood, and the absence of proper materials were not at hand in the second.

Q. When may we date any advance in the treatment of the pulp?

A. Not until after the introduction of arsenic by Spooner in 1836 for the devitalization of the pulp.

Q. What modes of practice are now pursued in the treatment of this organ?

A. Capping the pulp and devitalizing it.

Q. What was the theory advanced in favor of capping the pulp?

A. It was thought that if the pulp could be protected from pressure by an intervening material it might still retain its normal functions.

Q. Was this borne out by successful operations of this nature?

A. The theory seemed feasible; but at the time of these operations it was not taken into consideration that from the moment of actual exposure the pulp was in a greater or lesser pathological condition, and this condition would continue unless means were taken to restore it to health, hence, the capping operation generally proved unsuccessful.

Q. How were the first operations of capping the pulp performed?

A. Small circular disks of gold or lead were cut of sufficient size and made concave, the outer circumference resting on the solid dentine adjacent to the exposure. Gold was used by some, as it offered more rigidity, while lead was preferred by others on account of its poorer thermal property. The remainder of the cavity was filled with gold—an operation, under the circumstances, very uncertain in its results and very difficult of performance.

Q. Were any of these operations successful?

A. Despite the difficulty of these operations, some have been recorded successful, but they were noticed only in persons of healthy and strong recuperative organisms.

Q. Did the operation find many adherents?

A. At first it did; but the large number of failures caused it in a great measure to be abandoned. But some continued to have an abiding faith in the operation, and imagined that the cause of the failures was due more to the incompatibility of the metal than to the theory. Small disks of ivory quill, gold-beaters' skin, court plaster, tissue paper, etc., etc., were used to lay over the point of exposure, saturated with the balsam of fir to hold them in place, and the remainder of the cavity carefully filled without pressure on the point of exposure, with the hope that secondary dentine would form, and Nature thus aided by Art would result in success. But these hopes were not realized. Better results were accomplished after the introduction of the oxychloride and oxyphosphate of zinc, yet even with these the operation remains unreliable.

Q. It would appear that as either of these materials could be laid over the exposed pulp so gently, and allowed there to solidify, that the operation ought to be successful?

A. This was the supposition; but the nature of the pulp is so delicate, and it is endowed with such exalted sensibility, that it will not tolerate any material next to it. When we consider that the anæmic condition, the scrofulous and syphilitic diathesis all operate against the success of capping pulps, we can readily account for the few cases of successful capping.

Q. What should be done as an initiatory proceeding?

A. If the pulp be found only recently exposed, and the indications point to only slight inflammation, a sedative should be used in the cavity. The oil of cloves, or cinnamon, or the oil of cajiput, may be used to gently bathe the exposure, or a weak solution of carbolic acid may be used successfully at this time.

Q. What has proved the most successful capping material?

A. The oxychloride of zinc.

Q. Can you give a reason for this?

A. This material preserves the superficial dentine; and should the pulp die beneath, the death results in a dry gangrene which seldom gives rise to pain.

Q. How is this known?

A. Experience has demonstrated this; for on removing these fillings and opening into the pulp chamber, this mummified or dry condition of the pulp has been revealed.

Q. The use of this material is accompanied with considerable pain; why should not the oxyphosphate, which causes no pain, be used in preference?

A. The oxychloride of zinc causes pain from its escherotic property, but it has deep penetrating and preservative properties, and from these therapeutic qualities it is indicated as a pulp capping over the oxyphosphate.

Q. Has any other treatment been suggested?

A. Dr. Coleman proposes to cap an exposed pulp as follows: As much of the loose decayed dentine as may be removed painlessly is removed, and the cavity prepared for the reception of the filling, the cavity being flooded with carbolic acid to mitigate the pain. This is then absorbed away, when a small disk of cardboard, a little larger than the point of exposure, thoroughly saturated with nitric acid, is laid on the exposed point gently, and retained for a short time. This gives a sharp pain like toothache, but is never very severe or long continued. This disk is then removed, and another moistened with carbolic acid takes its place. The pulp is preserved from pressure by placing a concave metal disk over the paper when the filling may be completed. When such cases are to be completed with amalgam, he advises that a thin coating be given over the metal disk with oxychloride.

[TO BE CONTINUED.]

## TROUBLESOME CASES.

By Theodore F. Chupein, D. D. S., Philadelphia, Pa.

As we have frequently had cases of the kind, such as we propose to describe, and presume other operators have had the same, we venture to offer our mode of procedure, with the hope of aiding those to overcome the difficulties we had to surmount.

The case in question was one of the exposure of the nerve in the first right upper bicuspid, which was excessively decayed on its disto-masticating surface. The cavity of decay was filled with hypertrophied gum, besides quite a large pedicle or opercula of the same morbid and hypertrophied condition lying loose and flaccid on the buccal surface of the tooth, nearly obliterating a view of the tooth.

There was an excessive flow of blood at the slightest touch to the gums, which so filled the mouth as to conceal not only the tooth in question, but several teeth anterior and posterior to it. There was no possibility, in this condition, to make a devitalizing application.

Our first effort was to snip off with the curved blade scissors the pedicle of gum. Next we essayed to check the bleeding, first with hot water, and successively with perchloride of iron, carbolic acid cautery, and afterwards with trichloracetic acid, but these had but slight effect; there was a constant oozing of blood.

The cavity of decay was still filled with the hypertrophied gum. We could not use force to create an absorption of this, because of the exposure of the nerve, so that we had to proceed slowly.

We mixed equal parts of the acetate of morphia and powdered hydrochlorate of cocaine (about as much of each as would lie on the end of the small blade of a penknife), with a drop of carbolic acid, and essayed to insinuate this paste in contact with the exposure beneath the gum tissue, which filled the cavity, after which we secured this from escape into the mouth with a small pellet of cotton.

At the next visit we found the gum slightly absorbed, so that we continued the same treatment, using a little larger pellet of cotton.

After twō efforts more we could see the exposure, the gum having been cleaned from the cavity.

Applying the dam, we now were able to make the application of arsenic, the formula of which, by the way, we will give, as it has yielded to us remarkably successful results. Taking as much of the acetate of morphia as will lay on the end of the small blade of our penknife, with an equal quantity of the powdered hydrochlorate of cocaine and of powdered arsenic, we mix these on a glass slab, with the spatula, and by incorporating them with carbolic acid form a paste.

The nerve dies, or is killed by this application as quietly and as painlessly as an infant dropping to sleep, and this *in twenty-four hours.*

This application was made directly to the point of exposure and *slightly pricked in*, which was evidenced by the flinching of the patient.

The paste was secured in position by a small wad of cotton, and the cavity filled over this with a larger wad, using the precaution to pack this larger wad towards the second bicuspid, so as to avoid all pressure against the exposed nerve.

When the case next presented, the nerve was found to be dead; but the gum at the cervical margains still remained tough and unyielding, so that it would have been impossible to make an application of the dam, so that it would hug these teeth at their necks, and permit of a proper preparation of this important surface.

Our next effort was to wrap a piece of gilling twine or flax thread *twice around each bicuspid*, forcing these ligatures well up on the necks of the teeth, and then tying. A small wad of cotton was placed *in the interdental space*, when a larger wad was forced between the teeth and packed firmly.

After wearing this for two days, on the next appointment the dam could be nicely applied and all the surfaces clearly exposed. The dead pulp was removed and the cavity filled satisfactorily.

We would say, that in such cases we have found it preferable on opening into the nerve chamber of a tooth, *especially the molars,* to break through the septum of bone which separates the floor of the cavity from the nerve chamber, *with excavators* rather than with burs in the hand-piece of the dental engine. Because if thus accomplished the nerve chamber will be better defined, and the root canals can be clearer seen and better approached and better cleaned than by the more expeditious, but not as good, way, with the cavity burs.

## BRASS ARTICULATORS vs ALL PLASTER ARTICULATING MODELS.

We much prefer the brass articulator to the all plaster articulating models, especially in full upper and lower cases, but for other cases also.

In mounting the teeth for an entire case the six upper and lower teeth may be permitted to touch; but when the bicuspids are added by slightly separating the articulator by means of the regulating screw in the back, with its accompanying "jam nut," the two jaws of the instrument may be held apart ever so slightly, so as to permit the bicuspids and molars to touch, while the six oral teeth are kept apart the thickness of cardboard which is the proper way to articulate the dentures.

The same rule applies where the lower jaw is provided with natural teeth as far back—or farther—as the second bicuspid.

This could not be regulated with the same precision with the "all-plaster articulating models," hence we consider the "brass articulator" preferable in such cases.

However, in partial cases, where there are teeth in both jaws which articulate with each other, the "all-plaster articulator" may be employed, as in these cases there is no such thing as "opening the bite," hence it follows that such articulators are permissible. Even in such cases the brass articulator may be used with equal success and accuracy; we believe, that all things considered, the brass articulator has the advantage over its old brother, the all-plaster articulator.

THEODORE F. CHUPEIN.

## HOW TO PURIFY WAX AND HOW TO MAKE BASE PLATE WAX.

By THEODORE F. CHUPEIN, D. D. S., Philadelphia, Pa.

A fair equivalent of base plate wax may be made as follows: Wax which has been used for taking impressions should not be used a second time for the same purpose, unless it is purified. To purify the wax and cleanse it of foreign matter, procure a funnel and cut off the spout. Place an old, but clean, tomato can on your laboratory Bunsen burner, having half filled it with water. Put the funnel in this, letting the edges rest on the rim of the can. Put your wax in the funnel and let the water in the can boil. The boiling of the water will melt the wax in the funnel, and all pieces of plaster, sticks, or other foreign matter will fall or settle to the bottom. When the wax is all melted, let it cool, then by slightly heating the outer edges of the funnel, the cone of wax will drop out. You can now cut off the small end of the cone, which will be found to contain all the impurities.

Now take another clean tomato can, and fill it one-third full of water; place your cone of wax in it, and melt it by boiling the water. The base plate wax will be made much tougher if some of the wax peeled from the paper—or card wax—on which artificial teeth come, is added. While the wax is melting, prepare a smooth round bottle of a size that will go inside the can in which the wax is being melted. Fill the bottle with iced water and cork it. Make a lather of soap and lather the outside of the bottle. Have still another tomato can half filled with cold water, and place this near the one in which the wax is being melted.

As soon as the wax is all melted, put out the blaze and dip your bottle into the melted wax. Remove it from the can of melted wax and dip it into the can of water. Plunge it again into the melted wax and again into the water, once more into the wax and once more into the water. These three dippings will be found to make the wax about the right thickness. If it is wanted thicker, one or two more dippings will accomplish this; or if it be wanted *very thin*, one or two dippings alone may be found sufficient.

The wax may now be removed from the bottle by passing a knife around the bottom and down its side, when it can be peeled off, flattened, cut into square pieces and put away for ready use. The bottle is then ready for another dipping, and the process repeated until a sufficient quantity is made.

In melting the wax it should not be permitted to boil, as it would then be frothy and unfit for use. As soon as the wax is all melted the blaze of the burner should be extinguished and the dipping begun. The dipping should not be continued too long, otherwise the wax becomes chilled by the ice water in the bottle, which would make the base plate too thick.

It will be found that base plate wax thus made is thicker around the bottom of the bottle than at the upper margin, because the wax coats more at this point than it does above. This, however, is no disadvantage, as the thinner part of the base wax may be placed towards the back part of the model, and the thicker part towards the front, where the artificial teeth are mounted.

In the absence of card wax to toughen this base wax, a little Venice turpentine added to the melted wax will effect the same object.

While base wax thus made may not be equal to the nice sheets the dentist purchases from the depots, it will be found to subserve every purpose, and save considerable in the course of the year. Besides this, the sheets furnished us are often *too thick*, and by having it thinner, for some styles of work, the base wax thus made will often be preferable.

## OXYCHLORIDE OF ZINC CEMENT.

By Theodore F. Chupein, D.D.S., Philadelphia, Pa.

Considerable use was made of this cement at one time, before the advent of oxyphosphate cement. It mixes more kindly than the latter, but is not as adhesive. It caused pain when introduced into a cavity, and probably to this cause it was superseded by its younger rival, yet we consider that no dental office is well equipped without this valuable filling material.

For nerve capping, or in cases where the nerve is nearly exposed, oxychloride of zinc should always be used. We believe its introduction into a cavity, in such cases, results in the death or mummification of the pulp; but this occurs so gradually, so painlessly, and so benignly that the tooth remains serviceable for many years without giving trouble. We have seen cases where oxyphosphate of zinc has been used to cap nerves, or as an intervening media where the nerve was covered by only a thin septum of dentine, but such use has generally resulted in the removal of the filling and the intentional devitalization of the pulp. We speak from experience of this valuable filling material in such cases.

## A RIGHT-HAND GLOVE.

A right-hand woolen glove will be found very convenient to mitigate the excessive heat when lifting the crucible from the fireplace with the aid of the spring tongs, when melting gold or silver before pouring in the ingot mould, or even when lifting a ladle of zinc or lead befort casting a die. We say a right-hand glove, but of course if the workman be ambidextrous a left-hand glove will do as well.

And now the left-hand glove.

This will be found useful in holding a lump of charcoal while fusing a small nugget of gold, to prevent the flame from the blowpipe burning the hand.—T. F. Chupein.

## SELECTED ARTICLES.

### MAKING DENTAL ALLOYS AND CEMENTS.

By Louis Shaw, M.D., Brooklyn, N. Y.

The investigations and writings of Dr. Black have induced many to make their own alloys. To aid in this the writer gives his method in the *International Dental Journal*, from which we make extracts as follows:

I shall not discuss the various ways in which an alloy can be made. Each manufacturer of an alloy no doubt has a way of combining the metals that he thinks best. But I shall describe a method that I have used for a number of years with satisfactory results.

For melting the metals I have used a gas furnace made by the Buffalo Dental Manufacturing Company, and known as No. 40*a*, Fletcher crucible furnace. This can also be had to work with kerosene. A plumbago crucible comes with the furnace. The other articles necessary are an ingot mould, a small pair of crucible tongs, and a short clay pipe-stem.

The silver is first melted, adding enough borax to cover its surface and protect it from the air. If the alloy is to contain copper, the blast must be kept up a few minutes to raise the temperature of the melted silver. The copper, in the form of very thin sheet or foil, is now added piece by piece.

If it is to be an alloy containing gold, the proper proportion of gold-foil scrap, wrapped in a piece of paper, is dropped into the crucible.

When the gold or copper is melted, the blast is kept on a few minutes and the other metals of the alloy added, those having the highest melting points first. The tin, of course, will come last, and is best added in pieces the size of a large marble.

As soon as the last piece of tin is added the crucible is held in the furnace by tongs, and its contents stirred vigorously with the clay pipe-stem, suitably fastened to a piece of wood. While still stirring, the metal is quickly poured into the ingot mould. The stirring and pouring before the metal comes to rest is to produce as uniform an ingot as possible.

Some may have difficulty in procuring pure metals. Pure silver, in grain form, is sold by gold and silver refiners. Pure copper, zinc and tin can be bought from those who supply analytical and experimental chemists.

The ingot is readily reduced by a large coarse file, which must be kept for this purpose only. Passing a magnet through the thinly-spread filings will remove any particles of steel from the file.

The filings must now be tempered as directed by Dr. Black, either by keeping them in an oven at a temperature of 120° F. for three days, or putting them in a glass flask and immersing the flask in boiling water for fifteen minutes.

Lately I have adopted three formulæ suggested by Dr. Black. They are the following: one of silver and tin—viz., silver seventy-four parts, tin twenty-six parts; one containing copper—viz., silver sixty-four parts, copper four parts, zinc one part, tin thirty parts; and one containing gold—viz , silver sixty-eight and one half parts, tin twenty-five and one half parts, gold five parts, zinc one part. Dr. Black speaks favorably of this last formula.

## CEMENT.

As is generally known, cement powder is oxide of zinc, usually with some silica added, with the idea of making it more resistant to wear.

In most of the directions for preparing this powder, oxide of zinc is dissolved in nitric acid, and the nitrate of zinc is afterwards heated to drive off the nitric acid, leaving zinc oxide.

This part of the process is enough to deter most dentists from trying to prepare cement powder, as the fumes of nitric acid are very corrosive and difficult to get rid of, except through a chimney arranged for carrying off acid vapors.

This dissolving of the oxide is not necessary, and, by omitting it, any one can prepare the powder with little difficulty. Most oxides of zinc made in the United States are too impure for dental use.

French oxide of zinc is much purer and makes a very good cement. Hubbuk's English oxide of zinc is the purest I have been able to obtain, and produces a very white cement. All other oxides I have tried produce a more or less yellow product. This yellow color is owing probably to traces of the oxides of other metals. These are not sufficient, however, in the oxides of zinc prepared for medicinal use, to affect their value for cement. If a white cement is not desired, they answer very well.

The oxide is placed in a sand crucible, and the cover luted on with potters' clay mixed with water.

The crucible is now placed in a coal fire—a range will do—and covered with coal, so that it will all be brought to a red heat. After being held at a red heat for two hours, it is removed and allowed to cool.

The oxide is now removed and rubbed to a fine powder in a Wedgewood mortar, when it is bottled to keep it from the air.

The liquid is made by dissolving in water sufficient glacial phosphoric acid to make a dense syrup solution.

It is difficult to state the exact composition of the liquid chemically, as all commercial glacial phosphoric acid contains from seven to fourteen per cent. of sodium phosphate. On being dissolved, the glacial phosphoric acid slowly takes up another equivalent of water, and finally a third, becoming at last ortho-phosphoric acid. The liquid may then be a mixture of the three phosphoric acids holding sodium phosphate in solution. My knowledge of cement liquid is unsatisfactory, and I cannot always get uniform results with different lots. I have not been able to get pure glacial phosphoric acid, but hope with further study of the phosphoric acids to be able to prepare a liquid that will be always uniform. The process described, however, produces an oxyphosphate cement that compares favorably with any I have purchased, both as to working qualities and insolubility.

[After all, is it not better for a dentist to buy his amalgam and cement from some reputable manufacturer?—EDITOR *American Dental Weekly.*]

It is better, but it is well to know how it is done.—ED.

## ARTICULATING TEETH.

BY D. D. ATKINSON, D.D.S., Brunswick, Ga.

In prosthetic dentistry a correct articulation is of paramount importance. A denture made from a faultless impression will fail if the teeth on one side strike before those of the other. The lower jaw is the only bone in the human anatomy the exercise of whose function is dependent upon its exact relation with another bone with which it is not otherwise articulated. If artificial dentures are not constructed so as to preserve this continuity in the occlusion of the teeth, they will fail of their purpose. To show how to place the models on the articulator properly, so that the teeth will not need to be ground after the plate is finished, so that each tooth will occlude in the finished case in the mouth just as it did on the articulator, is the purpose of this article.

The temporo-maxillary being a double arthrodial articulation permits the greatest latitude in the movement of the mandible.

It is not easy for an edentulous person to close the jaws so that the upper and lower jaws will occupy their natural apposition to each other. However great the difficulty in securing this apposition as refers to the lateral movement, and that from before backward, be it remembered that in its vertical movement the mandible always bears a fixed relation to the superior maxilla and cannot be changed, no matter how wide the jaws are opened, nor how far the lower jaw may be drawn to one side. To determine the vertical relation between the two jaws, we will place a sufficiently large lump of softened wax in the mouth and direct that it be closed sufficiently to make a clear impression or indentation in the wax on both sides above and below. It matters not at this time if the bite was too far forward or to either side, the occlusion or vertical position will be correct. Suppose the case to be full upper and lower, we will now proceed. The lump of wax as removed from the mouth is chilled with cold water and trimmed on each side until only the bottoms of the impressions are left. To these the two models must be adjusted, the upper and the lower each on its respective side at the same time, and each fastened with molten wax. Let it be certain that the models touch the bottom of the impression in the lump wax bite. In this position they are to be placed in an articulator and fastened, after which the lump wax bite may be cast away. A common articulator which swings like the mandible at the condyle is a splendid instrument for the purpose. Now wax trial plates are to be made with wax rims to represent the teeth, and adjusted to each other on the articulator with a level surface all around. A good way is to make the upper first and chill it in water, then place a warm rim on the lower and close the articulator, having a sheet of wet paper between the two. The articulator may then be opened or closed without impairing the occlusion. It will be found that in placing these wax plates in the mouth the rims will be in perfect contact all around; but the patient may have closed the lower jaw too far forward or to either side upon the lump of wax in the first instance; if so, it can now be easily detected and corrected by several successive movements of the jaw and noting the correct position of the wax, which will inevitably be shown after a few efforts. This must be well marked on the wax, and both removed from the mouth and fastened together in their new position. By adjusting the models to the lump of wax, we have the absolutely correct occlusion, and by placing the wax plates in the mouth, we have corrected any error in the lateral movement. If the lump wax bite was incorrect, it will now be shown, as the wax plates in their corrected position will not fit the position of the models on the articulator. To remedy this take off the upper model from articulator, place it in the wax plate, and reattach it to the articulator. The teeth may now be arranged with an abiding faith that each tooth will strike in the mouth just as it does on the articulator.

For a full upper or lower set separately, the procedure is the same—a model must be made of the opposing teeth and adjusted to the lump wax bite, which must have been trimmed until only the bottom of the impression of the alveolar ridge is shown on one side, and that of the points of the teeth on the other. In all cases, full or partial, it is best to have a correct model of the opposing teeth. I mean of all the teeth of the opposite jaw.—*American Dental Weekly.*

## IMPRESSIONS OF MODELING COMPOUND.

Dr. W. E. Robertson suggests the following method for perfecting impressions of modeling compound:

Secure the impression in the ordinary manner, and after removal from the mouth, and when it has become quite hard, trim off any surplus until it corresponds to the shape of the rubber plate or base to be constructed. Then hold the inner surface of the modified impression over the flame of a spirit lamp, or Bunsen burner, until the surface of the impression only is softened, but not the main body of the impression. Then return the impression while it is warm to the mouth, and after firmly pressing it home, allow it to harden before removing it.

Dr. Robertson claims that such a method will give more satisfactory results than the ordinary manipulation of modeling compound —*Amer. Journal.*

## TOOTH DISCOLORATION FROM ARSENICAL PREPARATIONS.

Sometimes after an application of arsenic the patient returns, and though less than twenty-four hours may have passed, the tooth shows unmistakable signs of discoloration. First, we may ask how this is to be explained? Arsenic is a most powerful constringent, and when applied to a pulp, in which the capillaries are engorged, it is conceivable that this violent constriction causes an actual rupture of the small blood-vessels, so that the blood is emptied against the walls of the pulp canal, and passes into the tubuli of the dentine, producing the pink or brown color observable when the discoloration originates in this manner.

In a recent case of this sort the pulp was removed, fortunately, without tearing, and the copious hemorrhage which followed was finally arrested with hot water. The dam, of course, was in position, and canal was packed with cotton saturated with caustic pyrozone (25 per cent. sol.) and covered carefully with hard gutta-percha. This was left for twenty-four hours, at the end of which period the tooth was absolutely restored to normal color, and was therefore promptly filled, no subsequent discoloration having thus far occurred. The success of this bleaching depended upon the prompt application of the discolorizing agent, before the blood, which had entered the tubuli by extravasation, had become coagulated. An important moral, which may be deduced from this lesson, is to the effect that when treating anterior teeth with arsenic, especially where the capillaries are probably engorged, the arsenical dressing should not be allowed to remain in place for more than one day, if so long.—*Extract from Ed. Items of Interest.*

## THE LIBBY METHOD.*

### By Dr. J. L. Wolf, Washington, D. C.

Having had during more than eighteen months' experience opportunities for observing the most gratifying results from the use of the Libby hand-pressure gold pluggers, supplemented by the Rogers mallet points, especially in those cases which, by virtue of unusual difficulty attending the insertion of the filling, furnished excellent tests as to the efficiency of the instruments, it seems of sufficient importance, and this a fitting occasion, to call the attention of those who may not be entirely satisfied with the results obtained by the generally accepted methods. The feeling of confidence as to the results which follow the use of this method contributes greatly to avert much of the sensation of exhaustion often experienced.

As mallet points supplementing the Libby hand pluggers, the Rogers points are of incalculable value for the two-fold purpose of conservation of physical strength and condensation of material. With the Russell electro-magnetic mallet as the propulsive power they are capable of a very wide range of application.—*Ohio Dental Journal.*

## THE AMALGAM QUESTION.†

### By J. N. Crouse, D.D.S., Chicago, Ill.

There are elements of uncertainty about amalgam and its use in dentistry which are more than trivial. Whether performed thoroughly or in the most careless manner, fillings of amalgam are far from satisfactory. What is the stimulus to put forth our best efforts in the use of a second best filling material, when out of more than sixty different preparations, accurately tested, not one met all the requirements for a good filling material? We are indebted to Dr. G. V. Black for the first scientific method of testing amalgam, but the average dentist is without any means of determining the quality or behavior of the material that is more used than all others combined. It is entirely guess-work in making a selection without an elaborate and expensive outfit and the expenditure of much time in careful work. A common fallacy in the selection of an amalgam is that it must be very plastic and easily mixed. This is a great mistake, as it is impossible to pack it perfectly in a cavity. Another mistaken idea is that it is injured by manipulation after it commences to set. The exact opposite is true, for a stronger and better mass can be made if the amalgam be put to place by heavy hand pressure or by malleting after it has fairly begun to set.

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*Abstract of paper read at Southern Dental Association, Old Point Comfort, Va., August, 1897.

†Abstract of paper read before the American Dental Association, Old Point Comfort, Va., August, 1897.

A third fallacy is that the least amount of mercury possible to make the mass pliable is the correct manner of mixing, but in this case again the opposite is true.

Having brought with me a micrometer and dynamometers, and other implements, I invite inspection and practical tests. Many essential qualities can be shown and great benefits gained by taking part in this work.—*Ohio Dental Journal.*

## NITROUS OXIDE GAS.

C. Q. Colton, of the famous Colton Association of New York City, says: There are, no doubt, many dentists who manufacture impure gas, or administer pure gas after it becomes stale. There is this important fact to be considered. There is no injury produced by the inhalation of stale gas, only it fails to produce the effect desired. And if the gas is so impure that its inhalation would prove fatal, it cannot be breathed at all—it would be coughed up at once. When the gas is pure, it has no more taste or odor than the common air, and is perfectly agreeable to the lungs. I suppose that, in showing patients how I wish them to commence to breathe the gas, I inhale, in the aggregate, twenty gallons myself every day. There is no reaction following the inhalation of the gas. In this respect it is unlike all other stimulants. And this, simply because it acts on the blood, and not on the substance of the lungs or other organs. Consumptive patients will often feel stronger for days after inhaling it, because it supplies to the blood that element—oxygen—for the lack of which they are growing weaker and weaker. The good effects, however, are only temporary.

Where neuralgic pains arise from a low vital or unoxygenized condition of the blood, the gas affords instantaneous relief. This fact—

and it is a fact—has not yet engaged the attention of the medical profession.

Of what is nitrous oxide, or laughing gas, composed? It is composed of precisely the same elements—oxygen and nitrogen—as the common air, only the proportions are different. In the air we have (in round numbers) one-fifth oxygen and four-fifths nitrogen. In this gas there is half oxygen and half nitrogen, or, by volume, one of oxygen to two of nitrogen. Oxygen is the life-giving principal of the air, and in this gas we have more of it; a person lives a little faster while under its influence.

Chloroform and ether are sedatives, and depress the action of the heart, running the pulse down from 70 to 20 or 25 beats to the minute; and this, because they cut off the necessary supply of oxygen. The laughing gas, on the contrary, acts as an exhilarant, as by supplying an extra supply of oxygen to the lungs, the pulse is increased 15 to 20 beats to the minute. The former agents carry the patient down towards the point of death; the latter up to increased life.

I suppose I am safe in saying that, in the use of chloroform, one death has occurred in every 1,000 times it has been administered. I have given the gas 168,000 times without such an accident. And I doubt if there has ever been a well authenticated case of death caused by the gas, or a death in which there was not some other cause sufficient to produce the result.

Although my connection with this great discovery was incidental, yet I think it will be admitted that I was the occasion of the discovery, and that but for me it would not have been made; certainly not at that time. And is it too much to claim that the world is practically indebted to me for the anesthetic use of the nitrous oxid gas, having received and demonstrated its value after it had been abandoned and forgotten for the space of fifteen years?

I leave the subject to the impartial judgment of the profession and the public.—*Items of Interest.*

## BOOK NOTICE.

TIN FOIL AND ITS COMBINATIONS FOR FILLING TEETH. By Henry L. Ambler, M.S., D.D.S., M.D.

A short "Monograph" published by the S. S. White Dental Mfg. Co., in Philadelphia, and Claudius Ash & Sons, in London, Eng., has been sent us for review.

Being entirely in accord with the author as to the merits and value of this material for the preservation and filling of teeth, we can only add our testimony to his in the approval of what he sets forth, and our recommendation not only of the material, but of the perusal of the work.

Several suggestions are set forth, both as to its use *alone*, as well as to its *combination with gold;* and also its use with the matrix, in a manner recently suggested by Dr. Henry Register, which, from the softness and tractability of tin, would recommend it particularly for such cases. We might say very much of the material and the book, but prefer to let those intrusted in the subject read the book for themselves.

## OBITUARY NOTICE.

### THOMAS W. EVANS, D.D.S.

Dr. Thomas W. Evans, the famous American dentist, died suddenly at Paris, France, November 14, of angina pectoris.

Dr. Evans was 75 years old. He had only recently made a visit to Philadelphia on the sad mission of burying his wife, and it was only after his return to Paris that death overtook him.

Though accumulating considerable wealth by the practice of his profession, principally among the crowned heads of Europe, as well as of the nobility, the bulk of his fortune was accumulated in the appreciation of real estate in the neighborhood of the "Bois de Boulogne."

His fortune has been variously estimated ; some reports stating he had lost it all, and died almost in indigent circumstances, other reports according him wealth aggregating between six and thirty million dollars.

## PRACTICAL PLACE.

### A NEW CLEANSING FLUID.

A new spot-remover, or cleansing fluid, which, it is claimed, is of extraordinary value, consists of the following ingredients :

| | |
|---|---|
| Saponin | 35 parts |
| Aqua | 650 " |
| Alcohol | 350 " |
| Benzine | 8,940 " |
| Mirbane Oil | 25 " |

—*Nat. Drug.*

### To Harden Rubber.

According to a German chemist, rubber can be hardened by mixing powdered aluminum with the rubber before vulcanization.—*Exchange*.

### Infiltration Anæsthesia.

The fluid consists of a very dilute solution of cocain and morphia, with a small portion of chlorid of sodium. The needle of the syringe is introduced at a point in the area which it is desired to render anesthetic, and keeping it parallel with the surface is pushed on until the eye is hidden. A few drops of the fluid are then injected, and a wheal is instantly produced which is anesthetic. The needle point is then withdrawn and reinserted within the wheal in the line of the proposed incision, and the process continued until the whole area that it is desired to anesthetize has been rendered insensitive. If the operation be a simple skin incision, as the opening of an abscess, this is all that is necessary; but if a small tumor is to be removed, it will be necessary to infiltrate the tissues under the skin after this has been incised. In minor operations it is very successful. Its safety is beyond question.—Fife, *Dental Digest*.

### For the Protection of Cement Fillings.

Resin and wax, equal parts, melted on spatula and poured on filling before it is wet, is superior to either wax or paraffin.—*Med. Brief*.

### Massage in Inflammation of the Gums.

In cases of stomatitis showing on the external plates of the alveolar walls, in most cases of turgidity, or disturbed circulation about the gingivæ, massage with the ball of the finger will be found very useful. It presses the blood out of the distended capillaries, hurries the circulation in the sluggish blood-vessels, and gives tone to the whole local territory, re-establishing the nutrient currents and promoting resolution of any exudate material. Let the patient rub the gums and disturbed territory with the ball of the finger frequently.—W. C. Barrett, M.D.

### Laboratory Hints.

To keep your solder in place, add a little gum arabic to your flux, and rub with the borax and water on the slate.

To make sticky wax for holding clasps in place, use resin two parts, beeswax one.

To prevent plaster from adhering to the palatine surface of vulcanite plate: Just before packing the case, coat the model with a thick solution of soap, almost any kind of soap will do, but that which makes a thick lather in the shortest time is the best.

### ARTICULATING TEETH.

Always take an impression of the lower teeth when making an upper set, and in taking the bite, have wax trimmed to show the length you wish the teeth to be, and bite into it just sufficiently to show the tips of cutting edges and cusps where the model made from lower impression can be placed in proper position, etc.

### TO DUPLICATE MODELS AND IMPRESSIONS.

Take printers' ink-roller composition, heat in a water bath until well melted. Grease the model slightly with lard, and place it the same as if to mould a metal die, cover with a metal ring (a tin can opened at both ends will do), and pour the melted composition over the model. Let this stand over night. By morning the material is hardened, and the model can be withdrawn. The composition being elastic, it retains its shape, and a hundred models may be poured if necessary.

### TO HARDEN PLASTER BOIL IN PARAFFINE.

To give your plaster casts or models the appearance of ivory boil them in pure white wax.

BY PROF. P. G. TEMPLETON, Pittsburg, Pa., in *Dominion Dental Journal.*

### A FILLING POLISHER.

Dr. Genese, of Baltimore, is of the opinion that Johnston's Ethereal Antiseptic Soap is an exceedingly valuable article to use when polishing gold fillings with burnisher. It acts as a lubricant and polisher as well.—*Therapeutic Notes.*

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### STERILIZING PUTRID CONTENTS OF PULP CANALS.

Dr. C. H. Rosenthal, of Cincinnati, sterilizes putrid pulp canals by electro decomposition.

At a clinic before the Chicago Dental Society recently his method was producing nascent chlorine and driving the same through the pulp canal from positive to negative by osmosis. This was done by placing a saturated solution of sodium chloride on a piece of cotton and attached to the positive pole, which, upon contact, eliminated large quantities of free chlorine. The antiseptic qualities of the chlorine, together with the decomposing effect of the galvanic current, he claimed, renders these septic pulp-canals perfectly aseptic and ready for immediate root filling before removing the rubber-dam, claiming it advantageous to do so to obviate the possibility of regerminating the pulp-canal by contact with the saliva, which contains ever-present germs. The canals were filled in the following manner: A piece of orangewood was whittled down to the size of the pulp-canal, the wood then saturated with a double strength tincture of iodine, and a paste of iodoform and glycerine was then placed on the stick and carried to the pulp-canal and applied with a churning motion, the stick was broken off and left in the pulp-canal, the tooth was then ready for filling.—*Exchange.*

Don't approve of the stick part of the operation.—Ed.

### Danger in Carbolic Acid.

Prof. Czerny, of Heidelberg, warns against the indiscriminate application of carbolic acid, since it frequently gives rise to the so-called carbolic gangrene. This is caused by the clogging of the capillaries, due to the action of the phenol on the blood corpuscles. The author advises the use of less harmful antiseptics, as solutions of salicylic or boric acids, alum or corrosive sublimate.

### Investing Material.

One of the best investments for metal cases that are required to withstand a very high degree of temperature, is a mixture of two parts of not two fine plaster-of-Paris to one part of ground asbestos, grade 3, that has been passed through a No. 12 sieve to rid it of any coarse fibres. If the plaster is strong, a little less of it may be employed in the mixture. This will not crack or shrink.—*Dental Practitioner and Advertiser.*

Good for nothing. It is rotten, soft and unreliable, and will disappoint you.—Ed.

### Treatment for Pyorrhœa.

Sulphate of copper is a most useful agent in the treatment of pyorrhœa, and it is also a favorite of mine in the treatment of abnormal swelling of the gums from whatever cause. The gums are dried as thoroughly as possible and the copper applied by means of a piece of orange wood, whittled thin, which is first dipped in water and passed into the copper, a quantity of the powder will cling to the stick; then pack the copper down between the teeth and swollen gums. You can use it freely. It is not necessary to exercise care as to the quantity of the powder to be used; let it remain there for two or three minutes, then with a syringe of warm water wash the excess away. You will be surprised in the course of two or three days, and also much gratified, to see the extent to which the swollen gums have been reduced.—A. H. PECK.

### INGOT MOULD.

For an ingot mould to order use the common black lead, or stove polish, of oblong form. Two of these wired together may be made to answer almost all the requirements of dental casting.—*Odontographic.*

### FORMALDEHYDE.

Formaldehyde is at present the most popular antiseptic and disinfectant. It is found in the market as a forty per cent. solution. Eight to ten per cent. destroys the spores of micro-organisms in ten minutes. A one per cent. solution destroys cultures within an hour, and disinfects and renders feces odorless. A three per cent. solution will remove all infection from the hands; and one part in ten thousand prevents the growth of pathogenic micro organisms.—*Am. Med. and Surg. Bulletin.*

### ADMINISTRATION OF ETHER FOR ANÆSTHESIA.

During the administration of ether the most alarming danger signals are sudden pallor of the face, dilatation of the pupils, and darkening of the blood. When the symptoms present themselves, the anesthetic should at once be withdrawn, and resuscitating measures instituted.—HEARN.

### DIRECTIONS FOR THE PREPARATION OF A STERILE 2 PER CENT. SOLUTION OF EUCAINE HYDROCHLORATE "B."

To 1 part of Eucaine Hydrochlorate "B" add 49 parts of distilled water. Heat the mixture in a test tube over an alcohol lamp under constant shaking until solution is effected. If it is not quite clear, the solution must be filtered. It is then heated to boiling in the test tube, the mouth of which must be plugged with cotton. The plug should only be removed just before using the solution to prevent contact with the air. Cooling can be hastened by holding the tube in cold water; the solution is then ready for use. *Distilled water only, without the addition of any antiseptic*, should be used for the eucaine solutions.

## Tooth Washes.

F. H. H., Indiana.—For a cleansing wash a solution of soap is to be recommended. It may be made after the following formula:

| | |
|---|---|
| Castile soap | 1oz. |
| Alcohol | 6 ozs. |
| Glycerin | 4 ozs. |
| Hot water | 6 ozs. |
| Oil of peppermint | 15 mins. |
| Oil of wintergreen | 20 mins. |
| Oil of cloves | 5 mins. |
| Extract of vanilla | ½ oz. |

Dissolve the soap in the hot water and add the glycerin and extract of vanilla. Dissolve the oils in the alcohol, mix the solutions, and after 24 hours filter through paper.

If the "wash" is intended simply as an elixir for sweetening the breath, the following preparation, resembling the celebrated eau de botot, will be found very desirable:

| | |
|---|---|
| Oil of peppermint | 30 mins. |
| Oil of spearmint | 15 mins. |
| Oil of cloves | 5 mins. |
| Oil of cedar wood | 60 mins. |
| Tincture of myrrh | 1 oz. |
| Alcohol | 1 pt. |

Care must be taken not to confound the oil of cedar tops with the oil of the wood. The former has an odor like turpentine; the latter has the fragrance of the cedar wood.

When liquid washes like the last are used they should be supplemented occasionally with a powder, soap or paste, as such liquids alone will not keep the teeth white and clean.

## Chronic Gastritis.

Prof. H. T. Webster, M.D., of San Francisco, in a recent publication, discusses chronic gastritis and its treatment. In speaking of the diagnosis, he says: "The use of the stomach tube will afford best means of diagnosis. If siphonage be practiced an hour or so after eating, hydrochloric acid will usually be absent, and lactic acid, associated with fatty acids, are present with a large quantity of mucus. If siphonage be practiced seven hours after eating, undigested food will be found still remaining in the stomach, while in cases of functional dyspepsia it will have disappeared. Malignant disease will be excluded by lack of cachexia, absence of perceptible tumor upon palpation, and by the character of the material vomited, coffee-ground material soon appearing in cancer. In gastric ulcer, a diagnostic feature is frequent hematemesis."

He believes that if a proper diet be pursued and rational medicinal treatment be employed, almost every case of chronic gastritis will improve readily, unless it be complicated by gastric carcinoma, gastric ulcer, or hepatic, renal, or pulmonary disease. His treatment consists in lavage, disinfection and cleansing of the viscus with hydrozone. Lavage should be practiced every morning before eating, a small quantity of water (a pint) being used at first, which should be increased to two or three quarts as the treatment is carried on. The water should be warm (98.6° F.), and solutions containing Glauber's salt, aspepsin or boracic acid are often useful. Regarding the use of hydrozone in this affection, he says:

The introduction of hydrozone as a remedy in this condition was an innovation of remarkable value. A dram of Marchand's hydrozone, added to four ounces of boiled to divide all four of the collateral nerves which supply it. Investigations show that a single nerve is capable of maintaining cutaneous sensibility for the leg. This throws light upon paradoxical phenomenon long known, but not understood—that the division of a nerve is not necessarily followed by a loss of sensibility in the area to which it is distributed; and also the interesting fact which has not been heretofore fully appreciated—that there are many nerves that fully supply the areas of other nerves, for instance, the popliteal nerve.—*Modern Medicine.*

## FETID BREATH CURE.

According to a recent statement in *Sem. Med.*, ichthyol is one of the best and most rapid cures for the fetid breath of ozena. The nose is first douched with a warm 2 per cent. solution, and the mucous membrane is then swabbed with a 30 per cent. solution. This is also good in cases of rhinitis and pharyngitis sicca, without ozena.

THE
Dental Office and Laboratory.
FOURTH SERIES.
VOL. XII. PHILADELPHIA, MARCH, 1898. No. 2

# CONSTRUCTION OF CROWN AND BRIDGE WORK.

BY THEODORE F. CHUPEIN, D.D.S., Philadelphia, Pa.

[FOURTH PAPER.]

There are some patients to whom the display of gold in their mouths is not objectionable. Indeed, they rather like it. To such, an incisor or cuspid *all gold crown* may be inserted, even though the æsthetical taste of the dentist may be aversed to it. When such a tooth is demanded, the crown, should any of it remain, is restored with wax to its original shape. To do this well it may be necessary to apply the rubber dam over at least four teeth, for the wax will not adhere to the root or remains of the crown unless these parts are made *perfectly dry*. The lost tooth being restored with wax, as is shown by Fig. 62, the rubber dam is *cut away from the teeth*, and the lower teeth brought against the upper ones, to ascertain the occlusion. The lower teeth should not be permitted to strike the wax *at all;* they should be *perfectly free;* for it must be remembered that a thickness of gold will slightly increase the size of the wax tooth when the gold shell is constructed.

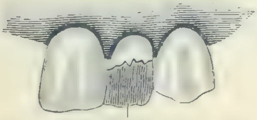

FIG. 62.

After the rubber dam has been *cut away* from the teeth, an impression is taken with plaster of Paris, and a die made by pouring fusible alloy into the impression, being careful to lute each side of the impression to prevent the escape of the melted alloy. This may be done either by the addition of plaster of Paris to the impression or with mouldine. The die being made, the tooth on each side of the one that is to be replaced is cut away, leaving only a "fac-simile" of the tooth remaining. Fig. 62, A and B, are cut away from the die with a saw. A gold shell may be constructed for such a case in the manner described in the 3rd paper of this series, published and illustrated in the January, 1898, issue of this journal, on pages 6 and 7. (See figures Nos. 58 and 59.)

Such a shell may be likewise constructed *by electrical deposit*, on which we shall have more to say farther on.

For making *all gold bicuspid or molar crowns,* these are constructed by bending a ferrule to fit the remains of the root end, and contouring this by means of the contouring pliers. Be sure that the lapped ends are chamfered, as has been recommended and shown by Fig. 47 of the January issue, at page 2, as also that the minutest piece of solder is used to unite the lap. Wherever solder is used, however high may be the karat, it leaves a stiffness at the point of union which interferes with the manipulation at this point, therefore *seamless tubing* is preferable for this purpose. The ferrule being made to fit the root end, it is driven on to the die by placing a flat piece of metal or wood on its upper surface, as shown by Fig. 60. The metal being soft it will curl at the point where it touches the gum festoon on the die, indicating where it is to be cut or filed away, so as to obtain a close fit at these points. The ferrule being made, it is next contoured. This may be done with the contouring pliers, Fig. 63. This contouring, though it produces a convexity to the ferrule, does not stretch it at its upper rim. The way to do this is to use both the contouring pliers, as well as to stretch the band at its upper surface on the horn of bench anvil. By using these means in conjunction, a ferrule may be stretched and contoured, as shown by Fig. 64. The stretching is done by holding the ferrule with the fingers of the left hand on the horn of the bench anvil, and delivering light blows on the upper rim of the ferrule until it assumes the form represented by B or C of Fig. 64.

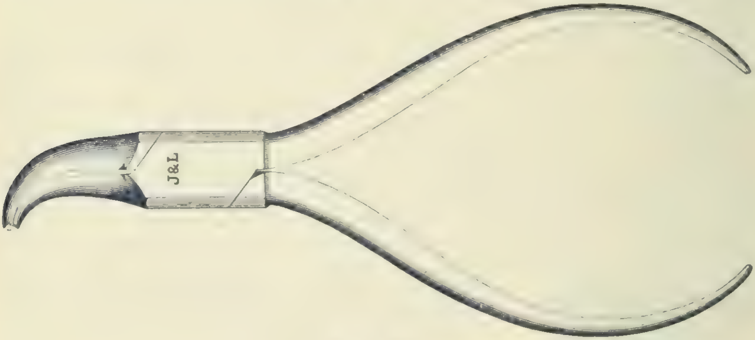

FIG. 63.

The ferrule is now placed on the root end of the die, and by means of the articulating model or bite, the height is determined. This should be cut so as to give room for the solid tip which is to be soldered to the upper rim of the ferrule, in order that it may articulate correctly with its antagonist. Bites, however correctly taken, are never as reliable as *occlusions in the mouth.* Therefore we advise, whenever it is possible, to try the ferrule on the root *in the mouth*, and cut it accordingly.

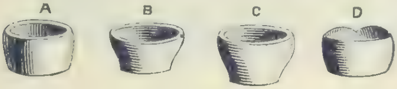

FIG. 64.

To make a solid tip, a piece of gold of the same karat as that used for the ferrule, about 30 gage, and about 1-16 of an inch larger *on all sides* than the die pattern of the die plate that is selected, and is placed on the die plate, Fig. 65, and driven into the depression by means of a lead hub, with a heavy hammer. Fig. 66 represents a piece of gold treated in this way. These die plates are sold at the depots either separately or with what is termed a hub mold. The hub mold is merely a solid piece of brass or iron in which tapering holes are cast and afterwards reamed out smooth. Fig. 67 represents the hub mold. These holes are of two sizes, the smaller for stamping up "Bicuspid tips," the larger for "Molar tips." Lead is melted and poured into these holes of the hub mold, for the purpose of

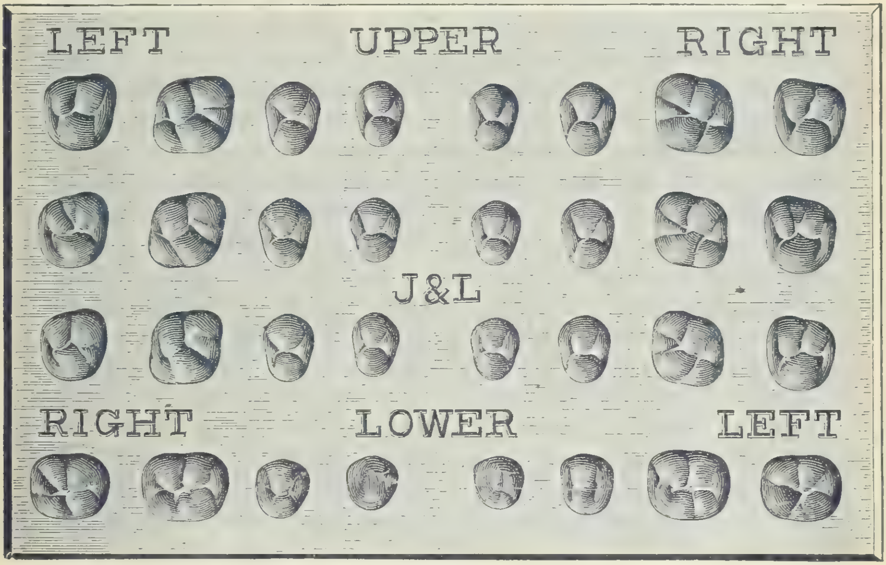

FIG. 65.

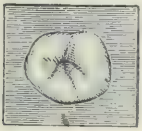

FIG. 66.

having a soft metal to drive the gold into the depressions of the die plate. The piece of gold is placed on the die plate, the die plate in turn is placed on the swaging anvil, the hub is held with the fingers of the left hand on the piece of gold on the die plate, and a blow given to the hub with the heavy swaging hammer in order to drive the gold into the depression. Despite the fact that the gold used is very soft, and yields readily, it is well to anneal it several times during this swaging, otherwise it might crack.

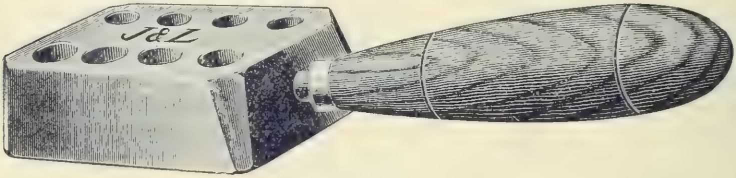

FIG 67.

For many years we have employed these lead hubs in swaging bicuspids and molar tips, but we have abandoned them in favor of *lead bullets.* The hub will not stay in position of itself, being "top heavy," and has to be held with the fingers. In holding it with the fingers ever so carefully, or even with a pair of tweezers, one is apt to displace the piece of gold from its position on the die plate, with the result of either ruining the piece of gold or stamping it up "awry." For this reason we prefer to use bullets of different sizes. The bullets are used thus: A slight blow is given to the bullet with a hammer. This flattens it slightly at the point where it lay against the anvil, and at the point where the hammer struck it. By this procedure it will remain exactly where it is put. The piece of gold is laid on the die plate and the slightly-flattened bullet laid on, and a blow given. The bullet remaining exactly where it is put, there is no necessity to hold it, even could it be held, and in this way we have found them infinitely superior to the hubs, as well as more reliable.

The "tip" having been swaged, it is cut within a line of the depression around its entire circumference. The inner surface is painted with a creamy solution of borax and water, and heated until the borax fuses all over evenly. Gold of a lower karat (generally 18 karat) is now placed in the depression in small pieces, and this is fused until the depression is full. This has to be done with care, for fear of melting the 22-karat tip. It is recommended to paint the outer, or convex, part of the tip with whiting and water, least any of the gold, used on the inside, would flow over and daub or smear the occluding surface, and thus spoiling the appearance of the tip. When the tip is filled it is thrown into acid pickle. The tip is then dried and heated so hot that gum shellac will adhere to it. A piece of stick, about two inches long, and about the same diameter as the tip, is also heated, and one end smeared with gum shellac. The gold tip is heated until the shellac melts, when the stick is held against its *occluding face* until the two are cold. The object of this is to have a handle whereby the under-face of the tip may be ground flat by holding it against the side of a carborundum wheel in the lathe.

This being done, the tip is soldered to the ferrule by binding the two together with fine wire, as is shown by Fig. 68. In this cut is shown how the tip is soldered to the ferrule without being filled, hence the square piece of gold, as it comes from the die plate is represented; a solid or filled tip is bound to the ferrule in the same way. The following plan has been suggested for making solid tips for molars and bicuspids. The impression of the tip needed is taken in mouldine. This should be flat on its surface, just like the die plate. Small pieces of gold are placed in the depression and there melted; when in a melted state a stick of stove polish is pressed on the fused mass, resulting in a sharp, well defined solid tip. The stove polish may be had at any grocer. It is supplied in round sticks about four inches long by three-quarters of an inch in diameter. Still another plan has been suggested by Dr. Keyser for making solid tips for molars and bicuspids. See his plan in this number, under the head of "Solid Gold Cusps," in the Report of the Pennsylvania Association of Dental Surgeons, page 45. There is no difference in the construction of bicuspid and molar crowns, hence the description of the one answers for the other.

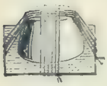

FIG. 68.

Dr. Evans described, at the meeting of the New Jersey State Dental Society, in July, 1897, a mode of doing this from one piece of metal. This mode was as follows: Graduated zinc dies were made, as shown by Fig. 61, and from these lead counter dies. A circular piece of metal, 30 gage, is first swaged into No. 1. This gives a concave disk without wrinkles. It is next driven into No. 2, and so on until it nearly approaches the size needed for a molar or bicuspid crown. An impression is taken of the tooth which it is desirable to crown, from which a die is made, when the metal disk is swaged into this form. This plan is applicable where crowns of this kind are intended as buttresses or piers for bridge work, after the crown has been dressed with carborundum wheels, so as to make the swell of the natural tooth the same size as the neck, as it would be impossible to make a fit otherwise.

We will not conclude this paper before we make another suggestion about "Open faced crowns."

It has been noticed that the part of these crowns which runs along the gum margin, which is only a very narrow strip, scarcely more than the one thirty-second of an inch wide, is very weak, and on this account liable to break. To avoid this liability, we make the ferrule in the usual way, but instead of placing *the lap* on the palatal surface of the tooth, we place it on the *labial surface.* In this way the palatal part of the ferrule is more easily fitted and is only *one thickness*, which need not be more than 32 gage, while the thin part of the crown running along the gum margin may be greatly strengthened by soldering an extra piece of gold, which need not be more than 35 gage over the lap. This not only strengthens the weak part but prevents the disfigurement of the lap.

The suggestion is shown by Fig. 69. Before snipping the ferrule, as is shown, the crown is annealed and then snipped; each piece ot the ferrule is bent over and fitted one at a time. The next snip is bent over on this; this will indicate where the second snip is to be cut, so that the snips are brought together *edge to edge.* Proceeding in this way, every snip is accurately fitted on the die, as well as brought accurately against its neighbor, and will take but a small quantity of solder to unite them all.

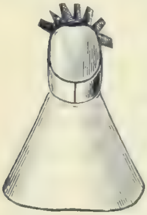
FIG. 69.

We think the suggestion is worthy of consideration, for the reason that the crown will only require a thickness of 32 gage on its palatal face, instead of 30 gage. The lap should be left a little wide, as shown by Fig. 69, before soldering on the extra piece, as in this way a little ledge will be left for placing the small pieces of solder which are to unite the two.

[TO BE CONTINUED.]

## OUR LOCAL SOCIETIES.

By THEODORE F. CHUPEIN, D.D.S., Philadelphia, Pa.

Paper read at the Pennsylvania Association of Dental Surgeons.

The importance of our local societies, and our attendance at their meetings, must be apparent to all thinking minds. There is no estimating the value of this to the progressive man, or to him who would be abreast of the times. It may be irksome to the old practitioner to hear repeated things which he has heard stated a score or more times, yet, even to these there are things to be learned. A view may be given to an old subject by one man's conception of it, which had never struck the listener before, which on more careful study and reflection might be lost forever, and never be recalled. The old saying: " In many men there are many minds " finds its fulfillment in the commingling of men interested in any subject.

Apart from the consideration of Social Intercourse, there is no estimating the benefits to be derived from an interchange of views. Papers may be read which are not worth the paper, ink or time spent in their production; but the discussion of the subject of the paper may bring out facts, thoughts and ideas which cannot be estimated.

We, therefore, urge all members of our society to write and offer papers at every meeting. This will not only benefit them in teaching them to express their thoughts, but will also be of benefit in eliciting what our members have to say in discussing and criticising their views.

We also enjoin a regular and full attendance at our meetings. Let it not be with them like the servant in the Gospel who was sent to invite guests to the marriage feast—one who had married a wife, another who had bought a brace of oxen, and another who had a farm and must needs look after it, all begging to be excused. These and the like are all flimsy excuses which should have no place in any earnest man's mind. We make dentistry our life-time study, our means of existence, and we cannot afford to lose an opportunity to learn or to improve ourselves. The attendance at the meetings may, it is true, sometimes be irksome or attended with an exertion; but let us think in the past how earnest men, who were doubtlessly influenced by the same motives which influence us, yet who threw off inactivity, overcame sloth, bid defiance to indolence, threw aside the comforts of the fire-side that they might attend the meetings, lend or give their influence to its deliberations, and thus by their energy place their profession on a higher plane.

Do you imagine that the work is done? That we have learned all there is to be learned? That no one can teach you more than you already know? If you think thus, be sure that the wheels of your car of progress have gotten into a rut which it may take you a lifetime of future exertion to get out of, and perhaps never.

Let us enumerate the advantages of an attendance at our meetings. 1st. Social intercourse; without which a man would become "as a

Pelican in the wilderness." 2d. We learn what the leading men in our profession are thinking, doing and saying. 3d. Their experiments, for the amelioration of suffering, with the process they are advocating. 4th. Men will talk of men or improved instruments for accomplishing certain work. 5th. The manner of doing a certain work which has been difficult, but which is rendered simple or easier, by a different manner of procedure. 6th. The strides that are taken by the profession, which, without our attendance at the meetings or reading our literature, we would be ever ignorant of. 7th. The separation of good from bad processes. 8th. The general news of the profession. 9th. The views which eminent men are taking with regard to dental education. We might enumerate many other reasons for attendance, but these will suffice.

How to increase this interest in our local societies is a problem which all thinking and earnest men are racking their brains about.

At one time this society held the leading place of any dental society in this country, and its meetings were attended by the leading men of our profession, and the nights of their meetings were looked forward to with the longing the school-boy has for a holiday. Now since the dissolution of the "Mississippi Valley Dental Society" it remains the oldest dental society extant.

Let each man of us then constitute himself a committee for the furtherance of dental education, and the lifting of this society to the place it once occupied; aye, more to its elevation beyond all past precedent. We can do it if we are earnest; we can do it if we are determined.

It will not do for us to wrap ourselves up in our pride and say, "What is the good of my going to the meeting, they can't teach me anything?" or "What is the good of so and so talking, he does not know more than I, 'he is not the only pebble on the beach?'" Such egotism will result only in one's own discomforture. "From the mouths of babes and sucklings wisdom proceedeth;" hence it follows we may learn from the most humble.

Apart from the attendance at the meetings of our local societies, there is no one thing better than the reading of our current literature. It is impossible for us to attend all the dental meetings, but by reading the journals we are kept in touch with those who are laboring with and for us in other fields.

Let us make our meetings attractive. Let each man engage to write something. Never mind what it is, whether long or short, good or bad, but let him write something that we may have something to discuss and something to talk about. Let the meetings be a "question box" wherein information of our ignorance, information of our shortcomings, information as to what we wish to know, will be explained or made easier by being talked over. We do not assemble "to show our smartness," but we assemble to receive and to give what experience has taught us.

To come back to the subject of our local societies, I would say that as surely as a man keeps aloof from his fellowman, refrains from social intercourse, isolates himself from his dental societies, he enters a wedge for the cleaving of his calling and its gradual downfall. If you wish earnestly to succeed, identify yourself with different associations, show an interest in their deliberations, do not refuse to do your share of work, saying, "there are others who will do it better than I." All such things will call you into prominence, and men will speak of you as a pushing, active, earnest man, and these little efforts will redound to your success and advancement.

If we love our calling with the proper spirit, and wish to see it take its place among the humanitarian professions of the healing art, to see it grow in importance and maintain its honorable usefulness, it behooves us to do all we can to assist in its growth, and extend its beneficence broadcast.

## A GOOD SOLDERING BLOCK.

By Theodore F. Chupein, D. D. S., Philadelphia, Pa.

A good soldering block for small work in the laboratory may be made as follows:

Take a piece of sheet iron about four inches square and cut the four corners, as shown by Fig. 1. The edges are bent so as to form a box. Punch a hole in the center and secure it to a handle with a large headed tack or nail. Now mix equal parts of plaster of Paris, powdered kaolin clay, powdered asbestos, and powdered charcoal, grinding these in a mortar until thoroughly mixed; then moisten with water to the consistency of putty, and transfer to the prepared sheet-iron box. While the mass is still soft, an

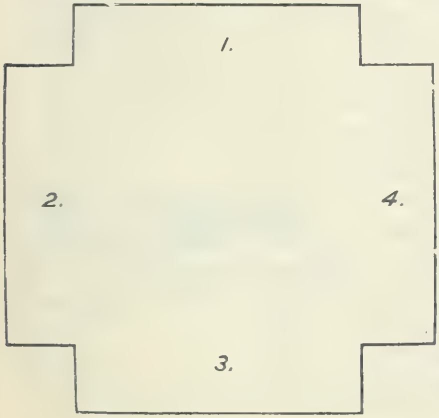

Fig. 1.

8 ounce weight may be pressed into it, so as to form a depression to prevent the article which is being soldered from falling off. Fig. 2 represents the completed device. For still greater convenience the device may be provided with supports, as shown in the cut. These are merely two pieces of iron wire, bent like Fig. 3, and sunk into the mass while it is still soft.

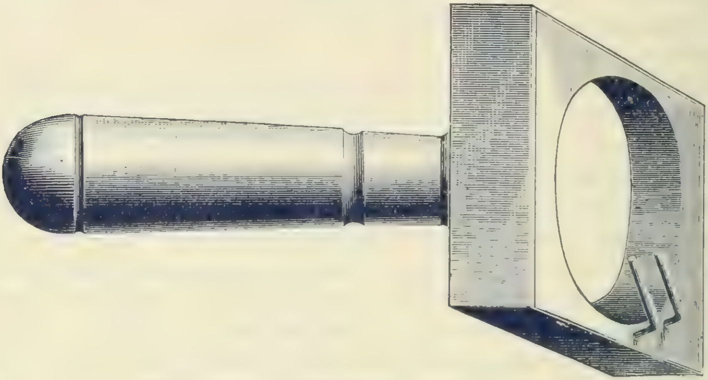

FIG. 2.

Another convenience may be readily made, somewhat in the same way, to serve as an ingot mould, for melting small quantities of gold or silver under the blow-pipe. A piece of sheet-iron, about the size and shape of a postal card, is cut as shown by Fig. 1, and bent into a box form. A piece of stout metal is rivetted to the bottom to serve as a handle. The box is filled with the mass as above given, and a depression is made into it after it hardens, as shown by Fig. 4. The gold is melted in the depression A, when a little tilt conveys the melted mass into the depression B. Lest the gold be spilt by this movement, a piece of metal like C is placed over the depression B, and held in place by stout iron wire clamps, like Fig. 5.

FIG. 3.

Dr. Essig, in his late work, gives the following formula for a filling for these soldering blocks:

Mix some starch paste, by combining one part of starch with six parts of boiling water, stirring these until the starch is thoroughly mixed with the water. Put this paste in a mortar, and add to it charcoal

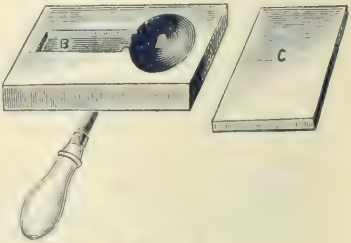

FIG. 4.

(which has been ground up but not to too fine a powder), until the three ingredients are formed into a mass like stiff putty. This may be put into pan—or into a receptacle like Fig. 2—to which a stout iron handle is rivetted, and the wire filed to a tang and fitted into a wooden handle. The pan with the mass is then heated until all the starch is driven off, when it is ready for use for soldering crowns or small bridge pieces; or if made larger, as a receptacle for soldering larger work.

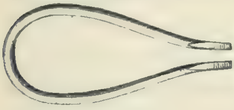
FIG. 5.

# A SIMPLE WAY OF MAKING A GOLD CROWN FOR CERTAIN CASES.

BY CHARLES P. CHUPEIN, D.D.S., Philadelphia, Pa.

As glaring and unsightly as an all gold crown appears in the front of the mouth, such crowns are often demanded, the desire for them being carried even to the extent of mounting them on artificial plates, to supply the loss of a central or lateral incisor or a cuspid.

To make a gold crown for such a case we have used the following plan: An artificial *plate tooth*, a little narrower than the space to be filled, is selected, of proper length and character, but the shade will be unimportant. A piece of *pure gold* is taken, long enough to encircle the tooth, and about the one-eighth of an inch wider than the length of the tooth. Two holes are punched into the strip to let the pins of the tooth pass through, and the gold firmly held to the tooth, either by rivetting or by bending the pins against the gold. Now, by means of a laboratory plate burnisher, the soft gold may be intimately burnished to the tooth, when by careful snipping the strip at different points, it is made to closely invest the entire porcelain crown without wrinkling. When the two ends are brought around, they are united with 22 K. solder, permitting this to flow over the joints, the pins, and such parts of the gold as were snipped.

It will not be necessary to invest this while soldering, for even should the porcelain be checked by the heat this will be unimportant

This is a much easier plan than making a hollow shell crown, and is susceptable to more artistic finish, since the whole contour of the foundation, or porcelain tooth, may be carried out; the narrowness at the neck, the bulge, or any swell, may be repeated by the gold investment. It may be well to state that the cutting edge of the porcelain facing may be made a trifle thinner by grinding, so that the gold tooth may not be *too thick* at this point.

Pure gold, 32 or even 34 gage, will be found plenty thick enough for these cases, and of either of these thicknesses it will be so much the easier adapted.

When the crown is finished, an extension or attachment may be added to it, if the crown be intended for a vulcanite plate, but if intended for a gold plate, such an extension will not be required, as the crown is soldered to the gold plate in the same way as any other porcelain tooth.

## REPORT OF THE PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS.

Reported by Theodore F. Chupein, D.D.S., Philadelphia, Pa.

### Tartars.

Dr. Roop read a paper on the "Salivary Calculi," and spoke of tooth-brushes best adapted for cleansing the teeth. These were brushes provided with comparatively stiff bristles. The face of the bristles, or that which touched the teeth, were spread apart, and at the points farthest from the handle were longer, so that they could reach the farthest back tooth and insinuate themselves between the teeth. He said that if these brushes were used with a rotary or vibratory motion, the teeth would be thoroughly cleansed. He favored the use of cider occasionally as a tooth-wash, having noticed its beneficial effect.

Dr. Bonsall used only mechanical means for the removal of tartar, and endeavored to leave the teeth, from which he removed the deposit, as smooth as possible. He was disposed to think that the subsequent employment of any acid left the teeth roughened, and in this condition rendered them more favorable for renewed deposits.

Dr. Trueman asked if Dr. Roop recommended the diluted acid vinegar for general use ?

Dr. Roop replied that he did not. He recommended it only in cases where there was a decided tendency to a rapid formation of tartar. He used it in the proportion of one part of vinegar to eight parts of water. In this proportion he had found it decidedly beneficial, keeping the teeth in a beautiful condition.

Dr. Bonsall remembered reading of the beneficial effects of buttermilk used as a tooth-wash to keep away the deposit of tartar.

Dr. Keyser exhibited the Wayne patent tooth-brush, which he had found quite efficient, and which he recommended to his patients.

Dr. Trueman asked what is the best solvent, and also, is the soft mass which collects at the necks of the teeth tartar in the incipient stage, which, if left undisturbed, afterwards got hard?

Dr. Roop thought that the soft deposit was not true tartar. It might be composed of the same constituents, but he did not think this accumulation ever got hard.

Dr. Keyser thought that aromatic sulphuric acid, diluted, was the best solvent for tartar. He preferred this because it was more pleasant to use.

### SOLID GOLD CUSPS.

Dr. Keyser described a manner of forming solid gold cusps. He melted a sufficient quantity of gold scraps to a globule; removing this and placing it in the die plate, he struck it while still red hot a blow with the hammer, which drove it into the depression he had placed it in. If not flattened sufficiently, he removed and reheated it, giving it another blow. The use thus made of the die plate did not seem to injure it in the least.

### OBTUNDENTS

Dr. Bonsall spoke of the efficacy of the sulphate of zinc as an obtundent. In his hands it was as efficient as the chloride, with the advantage of not causing the pain which the chloride did.

Dr. Chupein endorsed the statements of Dr. Bonsall, having tried it and found it efficient.

### AMALGAM.

Dr. Trueman reported some experiments with an alloy made of seven parts of tin and three of silver, combined with different proportions of mercury.

Equal parts of the alloy, with mercury, yielded the best results.

The experiments were made with seven parts of mercury to three of the alloy, and three parts of mercury to seven of the alloy; but equal parts of both yielded the best results. The object of the experiments being to establish the limits of alloy and mercury with these proportions of silver and tin. He stated that alloys could be cast into glass tubes of bottles, such as are used for the shipment of gold cylinders, and in this form the ingot was readily attached to the chuck of a lathe, where it could be turned into shavings, or reduced to filings for use.

It was the opinion of most of the members present that "scrap amalgam," or those parts of the alloy left over, being the surplus of the mix, was improved by remelting. When a quantity of these scraps were collected from different operations, whether the scraps were the scraps of the same alloy or of different alloys, were placed in the crucible, the heat drove off the mercury. It was important to know when all the mercury was driven off by the heat. Dr. Trueman said this could be ascertained definitely as follows:

When it was seen that the scraps in the crucible were all melted, by taking a hammer with a polished face, about the size of the mouth of the crucible, and holding this over the crucible, if any mercury still remained the face of the hammer would become clouded by the fumes of mercury. By repeating this, until no clouding on the face of the hammer showed itself (wiping off what was previously deposited each time), it could be definitely ascertained if all the mercury had been driven off by the heat.

It was likewise stated that in the use of any alloy which set promptly, should such part of it left on the bracket table set or hardened before the cavity was entirely filled, that it would not interfere with the integrity of the filling, if such hardened part would be added to that which was already introduced and *crushed in.* The second crystallization of the entire filling would make the mass as homogeneous as if it had all been introduced at one time.

[THIRTY-THIRD PAPER.]

## LEADING QUESTIONS AND ANSWERS FOR DENTAL STUDENTS.

By Theodore F. Chupein, D. D. S., Philadelphia, Pa.

[CAPPING PULPS CONTINUED.]

Q. Were any other treatments suggested for capping the pulp, other than those already spoken of?

A. Dr. I. S. King suggested the use of carbolic acid, mixed to a paste, with the oxide of zinc, placing this in contact with the exposure, or over the thin lamina of bone covering the pulp. The excess of acid being absorbed by gently pressing spunk against it, when the cavity was filled with oxychloride of zinc.

Q. Was there anything noticeable in this treatment?

A. It was noticed that the treatment seemed to result favorably, and that the covering to the pulp prevented the oxychloride of zinc from causing the severe pain, which it invariably did, on being used alone.

Q. How strong was the carbolic acid used with the oxide of zinc in this treatment?

A. Many used it full strength, but a twenty per cent. solution, used with the powder, was found amply strong.

Q. What followed this treatment?

A. In 1873 Dr. Craven proposed to hasten the formation of secondary dentine around the point of exposure, by using lactic acid combined with freshly-precipitated phosphate of lime, and drying the cavity thoroughly, this was applied to the point of exposure gently, covered with a few small disks of bibulous paper, and then filled over all with oxychloride of zinc.

Q. Was this suggestion attended with any better results than the other?

A. Many fine operators adopted the suggestion, and varied the manner of capping in several ways, but the reports were attended with about the same percentage of success and failures. Dr. King's plan was more favorably looked on as yielding a larger number of successes, or, if not these, rendering the tooth thus treated more comfortable in the greater number of cases.

Q. Has any treatment looking to this end been since suggested?

A. Recently Dr. Stowell speaks with great earnestness, faith, hopefulness and enthusiasm of the effect and use of hydronapthol in such cases. His mode of procedure is to isolate the tooth with the rubber dam. Applying a twenty-five per cent. alcoholic solution of hydronapthol to the cavity, he evaporates the alcohol of the solution with warm air; he then combines the powdered hydronapthol with the oxide of zinc, in the proportion of one part of the former to three parts of the latter, mixing this with the ordinary glazial phosphoric acid of the oxyphosphate cement, he introduces this into the cavity.

Q. Has locality anything to do with the success or failure of nerve capping?

A. From the reports it would seem this might have beneficial or disastrous success; healthy locations resulting more favorably to the success of the operation and yielding a larger percentage of successes.

Q. Have the experiments enumerated been performed on healthy or diseased pulps?

A. They have been performed entirely on healthy pulps, recent exposures, or in cases where only a thin lamina of dentine protected the underlying pulp.

Q. Has the treatment been resorted to in cases of long exposure, or after pulpitis has set in?

A. The treatment has been attempted, but in proportion to the length of the exposure, or the violence of the inflammation of the pulp, has the operation been attended with failure or success irrespective of the health of the patient, the locality or the apparent favorable state of the case.

Q. What was the treatment, in cases of exposure of the pulp, previous to the operation of capping?

A. The devitalization of the pulp.

Q. Was the devitalization of the pulp confined to any particular teeth?

A. At first this operation only included the front teeth, or teeth with but a single root.

Q. How was it at first performed?

A. By actual cautery.

Q. Was it practiced to any great extent?

A. The operation was so severe, indeed so barberous, that few dentists would resort to it, and fewer patients would submit to it.

Q. Is the same operation performed now with less pain?

A. It is. By the means of the combination of arsenic with morphia, cocaine and other local anæsthetics, or by the still more recent suggestion of cataphoreses or electrical osmosis, the death of the pulp is secured with scarcely any pain.

Q. Who suggested the use of arsenic for the devitalization of the pulp?

A. A Dr. Spooner, of Montreal, Canada, in 1835, first used arsenic to destroy the pulp and to mitigate the pain attendant on the cutting of the dentine in forming a cavity in a tooth for subsequent filling, but he did not make it known. His brother, Dr. S. Spooner, of New York, made the discovery known in an excellent treatise, in 1836.

Q. What was the effect of this discovery?

A. All teeth, back as well as front, single or multi-rooted, could be treated for pulp exposure.

Q. How was the operation then performed?

A. At that time only the ganglionic portion of the pulp in the molars were removed. The prolongations in the roots of these teeth were left undisturbed, or, if removed, were left unfilled.

Q. What was the result of this?

A. The decomposition or putrifaction of these remains of organic matter gave subsequent trouble often resulting in alveolar abscess.

Q. Did not these sequences prove disheartening to many operators, or were regarded with astonishment?

A. They were disheartening and could not be accounted for, and many attributed the cause of the sequences to the imperfection of the operation.

Q. Were these reasons really the cause of the failure of the operation?

A. The operation may have been badly performed, but the real cause of the trouble was not then understood.

Q. Who demonstrated this?

A. Dr. Maynard, of Washington, D. C. He not only removed the pulp from the crown of the tooth, but also from the root canals, and these canals he filled, so as to prevent the ingress of all effete matter. This was done a number of years after the discovery of Dr. Spooner of the effect of arsenic for devitalizing the pulp, and it was only then that such teeth were made serviceable and comfortable by filling.

Q. Did the operation, as performed by Dr. Maynard, lead to any other results?

A. It did. The action of the drug was considered and its mode of application improved, both by combining it with other agents to lessen the pain of its action, as well as to the manner of securing it, to prevent its action, except to the point it was desirable to have it act.

Q. What is arsenic?

A. Arsenic is a metal. In its native state it is not used as a medicine, but by roasting the ore a fine white powder is procured which is purified by sublimation. When the ore is heated it emits an odor like garlic, but in the powder it has no odor, and is the more dangerous from being liable to be mistaken for some innocent powder, such as powdered alum, or the bicarb. of soda. In large doses it is a violent irritant poison, but in smaller doses it acts as a tonic and increases the appetite. A very minute quantity is sufficient for pulp devitalization—the one-sixtieth of a grain being sufficient, or a quantity in size as large as the head of a pin.

Q. What do you mean by sublimation?

A. It is a chemical operation by which substances are made volatile by heat, and then condensed again into a solid form. The arsenical ore is made volatile by being heated to redness, when, by the proper apparatus, the vapor is condensed into the solid powder in which we have it for medicinal use.

Q. How does arsenic act?

A. It produces an excitement on the sensory nerves, and afterwards a paralyzing effect, and from its nature, as an irritant, induces violent inflammation.

Q. Is this always its effect?

A. The amount of inflammation is induced in proportion to the quantity used, so that an overdose may defeat the object desired.

Q. Does it invariably produce death to the pulp?

A. The absorption of the drug has been often known to fail, even after the poison has been laid in actual contact with the pulp.

Q. Should arsenic be applied while pain is felt in the tooth?

A. It should not.

Q. What should be done then?

A. The pain should be first subdued and perfect quiet obtained.

Q. How is this accomplished?

A. The cavity of decay should be cleansed of all food, debris, and as much loose decayed dentine as may be removed without inflicting pain; then the application of creosote, chloroform, or oil of cloves introduced as soothing agents, after which a paste made up of acetate of morphia, hydrochlorate of cocaine and carbolic is introduced and sealed in the cavity gently with cotton floss. This may be left in from twelve to twenty-four hours—until all pain subsides—when the arsenic may be applied.

Q. How is this applied?

A. A paste is formed of equal parts of arsenic, acetate of morphia, and powdered hydrochlorate of cocaine, combined with oil of cloves, creosote or carbolic acid. An amount of this paste, equal in size to the head of a pin, is laid in contact—preferably—with the exposed pulp, or, if this be not possible, laid over the floor of the cavity. It is held in place by a concave disk of metal, and over this a larger wad to keep the disk in place.

Q. Are there any precautions to be observed in making these applications?

A. Should the cavity be on the occlusal surface of the tooth, the application will be comparatively simple; but should it be on the mesial or distal surface, the gum at the interdental space should be well cauterized with a little carbolic acid, after which the application is made. The sealing in of the arsenical paste should be made, in all positions, with no pressure towards or against the pulp.

Q. What would be the effect of using an overdose of arsenic for destroying the pulp?

A. If too large a quantity of arsenic be used in the effort to destroy the pulp, the object would be defeated by arousing an inflammation which would prevent the absorption of the poison; if not this, the use of a large quantity might result in its oozing from the cavity, attacking the gum tissue of the interdental space, and thereby causing a dangerous sloughing.

Q. What should be done in case of sloughing from the application of arsenic?

A. The sloughed parts should be freely bathed with "Dialized Iron" in the effort to neutralize the arsenic.

Q. Does the application of arsenic cause pain?

A. It is such an irritant poison that, despite the best effort, pain will be produced, but if the paste be made thick, a minute quantity used, the formula made as above described, and the application made without pressure on the pulp, the amount of pain is reported so slight as to be described as only the least discomfort, ofttimes not even this.

Q. Was not arsenic used considerably, at one time, as an obtundent for sensitive dentine?

A. It was.

Q. Why was it discontinued?

A. Because of its disastrous results in being absorbed by the dentine, and thus causing the death of the pulp with all the accompanying trouble from alveolar abscess.

Q. Do not some operators still use it, and advocate its use?

A. Yes. Dr. Register has found it very serviceable when used in the mild form of "Fowler's Solution," having secured, with this solution, an almost total immunity from pain while excavating the dentine, and with care in its use, having had no disastrous results to follow.

Q. What is Fowler's Solution?

A. Fowler's Solution of Arsenic is a preparation made with arsenic, bicarbonate of potassa, and the compound spirits of lavender, each fluid-drachm of the solution containing about a half grain of arsenic.

Q. What has Dr. Register to say regarding its use?

A. He says: "I have been using Fowler's Solution as an obtundent for more than four years, and have noted no ill effects in connection with its use. I recognize, of course, that it would not do to teach students to use any of the arsenical preparations, as obtundents; but as I am talking to experienced practitioners, I present the subject for your consideration. I do not believe a pulp can be killed by its use. I have tried it and failed; moreover, I have never had a case of pulpitis following its use. Of course, an antidote should be applied after using it. I have used Fowler's Solution in double strength (2 per cent.), and filled the cavity with cement, and after weeks, upon removing the filling, have found the dentine sensitive."

Q. How may the effect of arsenic be neutralized?

A. The preparation known as "Dialized Iron" will check its action, or the powdered carbonate of magnesia is likewise used as an antidote for it.

Q. When pain supervenes from the application of arsenic, is it severe or of long continuance?

A. Ordinarily it is neither. A dull pain, amounting to discomfort, or a knowledge of its presence, continued, as reported in the largest majority of cases, for an hour or two, generally constitutes its action in the killing of a nerve.

Q. Suppose the pain continue longer than this time, what is the inference?

A. The inference is that despite the care used in making the application so as to avoid all pressure, the pulp must have been in an inflamed condition when or before the application was made.

Q. How should the patient be instructed, in case the pain continues beyond the ordinary time necessary for the arsenic to paralyze the pulp?

A. The patient should be instructed to return so that sedative treatment should be used to suppress the inflammation.

[TO BE CONTINUED.]

## ODONTOGRAPHIC SOCIETY.

Tenth Anniversary of the Odontographic Society (organized 1887), of Chicago, Ill., was held on the 21st and 22d February, 1898.

President, Geo. B. Perry; Vice-President, G. W. Schwartz; Secretary, H. H. Wilson; Treasurer, Edmund Noyes.

Board of Directors—C. E. Bentley, Chairman; J. G. Reid, W. H. Fox.

Board of Censors—E. K. Bennington, Chairman; A. G. Johnson, H. J. Goslee.

The announcement came to hand too late for our January issue. —[Ed.

## SELECTED ARTICLES.

### WHERE IGNORANCE WAS NOT BLISS.

By Malcolm W. Sparrow, L.D.S., Toronto.

While reading Dr. Martin's article on "Popular Dental Education," in the May number of your valuable journal, I was convinced of the truth there is in his reference to the ignorance of medical men—not all—who pretend—or shall I say, presume—to diagnose troubles which pertain strictly to the science of dentistry. Not only this, but the readiness with which some M.D.'s undertake the treatment of cases that are entirely out of their sphere—such as the extracting of troublesome teeth, the treatment of alveolar abscesses, *et cetera*, or by telling their patients hobgoblin stories about some maxillary trouble or another, which they do not themselves understand, nor have been taught to understand, thereby rendering it almost impossible for a dentist to remove from the patient's mind the fallacy of the M.D.'s diagnosis—is indeed provoking.

It seems to me that a medical man, without the degree of L.D.S. or D.D.S., ought not to prescribe for a patient suffering from derangement of the masticating organs—unless for temporary relief—any more than a dentist, without the degree of M.D., should prescribe for a patient suffering from a derangement of the digestive organs. It is no more than right that we should be fair with one another at all times. Some medical men, however, will grab at anything which promises a fee, and if the patient suffers through their ignorance of dental science, *messieurs les docteurs* try to justify themselves by declaring the case a most remarkable one, and continuing experimental treatment until some friend of the patient advises him or her to consult a dentist, usually at a time when it is "too late to mend." The medical profession should be a *corps d'honneur* as well as a *corps de guerir.*

All this leads up to a case I have at present, which the result of the M.D.'s ignorance has proven so serious to the patient that I feel justified in my "righteous indignation."

One day, some two years ago, a young woman whom I had often seen in the hotel at which I dine, came into the dining-room with a badly swollen face. Being on speaking terms, I made some jocose remark about the pleasures of toothache, when she informed me, with a satisfaction that piqued my vanity, that Dr. ——— (a distinguished M.D.) was treating her. Being somewhat sensitive, and remembering certain rules of professional etiquette, I said no more. Three days later I was dining at the same hotel, with Dr. ——— (the aforesaid M.D.), sitting opposite, when in walked the young woman, with her face so badly swollen that her right eye was almost closed. As she remained out of hearing, I ventured to broach the subject to her physician.

"You are treating Miss ——— ?" said I.

This may have been cheeky of me, but I felt that I knew Dr. ——— well enough to make the query. I may add that the doctor was a practitioner of some twenty years' experience.

"Yes," said he. "It is a very bad case."

"What do you think it is?" said I, growing bolder, and at the same time wondering if the trouble could be some complication of which I was ignorant.

"Well, hem—ah—it is something out of the usual order," said he, with an air of great intelligence.

"Abscess of the antrum?" I ventured.

Now, I do not think it was presumptuous in making this venture, because I believe any dentist would have ventured the same remark, and with considerable less diffidence, perhaps.

"Oh, no; oh, no. Nothing of the kind," said the wise M.D., with great assurance, and not a little hauteur, "it is something very extraordinary; very extraordinary, indeed."

I resumed my soup with a feeling that I had been sat upon.

The patient disappeared. Her physician, however, continued to take his meals, *sans souci*, at the same table with me, and having been sat upon once, I was very careful not to place myself in a position to be sat upon again, therefore our loquacity was exercised over everything but the girl with the swollen face. The next I heard of her she was in the hospital.

Several months afterwards, she came to me to consult about the possibilities of an artificial denture. The condition of her mouth was appalling. From the left central to the right wisdom, the teeth and the alveolus were gone. The soft tissues were in a very angry condition, and there was a most obnoxious discharge of pus. Just then an artificial denture was out of the question. As she was under the physician's care, I told her to continue his treatment until the mouth was in a proper condition, then I would, if she desired, see what could be done for her. I saw her several times, at rather lengthy intervals, but it was not until a few days ago that I was enabled to take an impression. The brief history of the case is as follows:

1. An ulcerated superior right six-year molar, which was neglected until face began to swell.

2. The learned M.D.'s wonderful diagnosis and experimental treatment.

3. Abscess of the antrum, with all its pain and offensiveness.

4. A change of physicians (this man understood the case, but it was too late), followed by several weeks in the hospital, excruciating suffering, loss of teeth from superior left central to superior right wisdom, with continued suffering.

5. Necrosis of alveolus from central to wisdom, which came away in three pieces. I have in my possession one piece of bone which embraces the socket of the right central, lateral, canine, and first bicuspid. I have also a model of the mouth as it is at present.

Last, but by no means least, one year and a-half of treatment and waiting, to say nothing of the annoyance and inconvenience before the wound healed. During this time the patient was at home, some distance from the city, under the treatment of her physician.

The wound is now healed, with the floor of the antrum gone, and a fissure opening through the soft tissue, which permits air and fluids to pass through the nose from the mouth. How I am to succeed with an artificial denture is a problem which just now appears to be something akin to a Chinese puzzle.

This whole trouble, I think, can safely be attributed to the ignorance of the M.D., who was so wondrous wise in his diagnosis. With this example before me, I can heartily coincide with Dr. Martin's statement:

"There are many notable exceptions among the medical profession, but we fear by far the greater majority are sadly, culpably ignorant of the simplest principles of dental conservation."—*Dominion Dental Journal.*

## A WORD OF WARNING.

By E. H. Babcock, D.D.S., M.D., Brooklyn, N. Y.

In 1867–68, at King's College, London, Sir Joseph Lister introduced antiseptic surgery. He used carbolic acid solutions for washing the hands of the operator, for saturating all bandages, and as a spray about the site of the operation, and over the hands of the operator and his assistants. As a result, the tissues became saturated with that drug, the operators were great sufferers, while the patients developed all the symptoms of carbolic acid poisoning.

A few years ago, in a public speech, this same great Lister announced to his hearers his regret that he had ever favored the method of treatment that bears his name. Lister's method was extreme. It set men to thinking and experimenting. It taught that cleanliness was necessary for the success of an operation.

When this light began to dawn upon the minds of the general surgeon, what a change came about in the operating-rooms! What was once the dirtiest room in the hospital was transformed into the cleanest. The operating-gown, dark with age and stained with the blood of an hundred victims, gave way to the immaculate white dress, fresh for each operation. The floors, covered with sawdust and filth, glistened like snow under the application of water and brush. And to-day the surgeon enters any cavity of the human body with less trepidation than did the surgeon of old approach the amputation of a finger.

In dental surgery the history of the use of amalgam may serve to illustrate the thought I am desirous of making clear. Its advent was hailed with joy; everybody used it. Then there came a reaction, and no one would admit using it, or that it had any intrinsic worth. To-day, by its intelligent use, the dental surgeon is able to save many a poor tooth that is not "good enough for gold," and would formerly have been consigned to the loving embrace of the forceps.

"I care not what may be the condition of the root; only give me such and such antiseptic and I will fill that root-canal and all will be well." This seems to be the prevailing thought among dentists at the present day, and if it is allowed to go on without remonstrance, it will work great injury to more than one dentist—to more than one patient.

Dentists are thankful for the powerful antiseptics that synthetical chemistry is placing within their grasp. The antiseptics act at once; they overcome putrefactive changes. But does their power never wane?

A chemical battery will develop an electric current. It is active for a time; then it stops—all chemical action has ceased.

These antiseptic agents have a certain amount of stored-up energy. There must be a limit to it; they must in time lose their power.

In teeth with devitalized pulps the organic portions will undergo degenerating chemical changes—putrefaction. Antiseptics have the power of combating that putrefactive action. The less the organic matter to putrefy, the longer will a given quantity of an antiseptic continue to prevent sepsis. Consequently, the more thoroughly all root-canals and pulp-chambers are cleansed of organic matter, the greater will be the freedom from trouble after root-filling.

To make a long story short, what should be taught in every dental college, preached in every dental meeting, and practiced at every operation for the filling of root-canals, is "mechanical antisepsis."

Thorough mechanical cleansing of root-canals should always precede the use of any antiseptic.—*American Dental Weekly.*

## PRACTICAL PLACE.

### HYDRONAPTHOL IN THE TREATMENT OF THE DENTAL PULP, ALIVE OR DEAD.

Dr. S. S. Stowell has read a most interesting paper before the First District Dental Society of the State of New York, on the above subject, published in the *Dental Cosmos*, from which we make some extracts :

"We all know with what fear and dread we have opened into a pulpless tooth of long standing, having no fistula, and what dire results have followed, supposed to be the result of a multitude of hungry microbes rushing into a fertile field. An inflammation is at once set up which is almost unbearable, the quickening pulse and rapid breathing soon indicate high fever, and often for two or three days or a week the patient, whether a robust man or a delicate woman, would be confined to the bed in a dark room, there to writhe in agony until suppuration of the inflamed part takes place, and the pus burrows its painful path through the plate of bone and soft tissues, and finally breaks and discharges.

"In the meantime the physician and dentist have been in almost constant attendance, using all known remedies for such cases, and neither doctors nor medicines have really done any good, other than to encourage and speak good cheer to the suffering martyr, that for all this agony he will still retain the tooth, that it may yet become useful."

Dr. Stowell is particularly earnest, hopeful—nay, even certain—that his treatment is efficacious, as is shown by the next paragraph. He continues :

"We have all been through this experience, either personally, or with our patients, and all have realized how powerless we were with all our drugs to relieve our patients' sufferings. Gentlemen, I make the statement here that when an old pulpless tooth is opened into, if the alcoholic solution of hydronapthol is at once placed in the pulp canal, the conditions referred to are *absolutely impossible.*"

In another place Dr. Stowell gives the solubility of hydronapthol in different menstrums.

| | | | |
|---|---|---|---|
| In alcohol, | about | 1 to 2 | parts. |
| In hot water, | " | 1 to 300 | " |
| In cold " | " | 1 to 1,100 | " |
| In olive oil, | " | 1 to 20 | " |
| In ether, | " | 1 to 2 | " |
| In chloroform | " | 1 to 2 | " |

Dr. Stowell uses the hydronapthol in two forms—the twenty-five per cent. alcoholic solution,* and the powdered form. In the treatment of roots and antiseptic conditions, he uses the alcoholic solution, " often reducing this with glycerole or water." He continues:

" I will now refer to another use of hydronapthol, which I have found of priceless value, and so far as my research has extended, I claim originality. I refer to the combination of the powdered hydronapthol with the zinc oxide of our common oxyphosphate cement. I combine in parts one-quarter of hydronapthol to three-quarters zinc oxide, mixing this combination with the phosphoric acid and using as any oxyphosphate cement for pulp-capping and for protecting permanently all exposed, sensitive, or soft parts in live teeth, as an antiseptic, non-irritating lining for all classes of fillings. I first bathe the cavity with the alcoholic solution, which penetrates the soft, leathery decay as well as the tooth structure; the alcohol soon evaporates, leaving a deposit of hydronapthol in the cavity. I now either line the cavity, or fill it entirely with the hydronapthol cement, which is rendered non-irritant and antiseptic by the presence of the hydronapthol incorporated into it. I sometimes incorporate a little oil of cloves or carbolic acid into this cement, which acts favorably as a local anæsthetic; with this addition, the foregoing treatment may be applied to a tooth with a pulp slightly or nearly exposed, which has ached some, or may be aching at the time of presentment, with almost positive assurance of successful results, without pain to the patient, who should be instructed to call again, in a few months, for a more permanent filling, when the tooth will be found to be quite free from sensitiveness. The cavity may now be more thoroughly prepared, and a more permanent filling placed in it, lining the cavity again with the combination cement. If, however, the cement is not badly worn, it may be left for a much longer time with still better results."

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* By adding fifty-seven grains of powdered hydronapthol to one-half ounce of ninety-five per cent. alcohol, a twenty-five per cent. solution will be produced.—[Ed.

" The addition of the hydronapthol to the cement in the proportion mentioned reduces its wearing quality but slightly, if it is mixed hard ; but as we use the cement quite soft in the treatment of such cases, its wearing quality is, of course, impaired."

* * * * * * * * *

" I will say that the results thus obtained have been little short of marvelous, as I have taken liberties with hypersensitive and soft teeth by leaving the soft sensitive decay undisturbed in the cavity, treating it as before mentioned, to the delight and comfort of my patient, and assurance to myself that I have put nature at her best to restore the affected part to a healthy normal condition, less the part lost by the first attack of the deadly microbe."

## LIQUID AIR.

We record in our journal the production of air—" Oxygen and Nitrogen "—in a liquid form, brought to our notice by Prof. Barker, of the University of Pennsylvania. This is no new thing, yet we have no record where its production has been made in such quantities and in such a comparatively cheap process as to permit experimentation.

Prof. Dewar, of Glasgow, produced liquid air, but at a cost of $2,500 a quart ; but it remained for an American, a Mr. Charles E. Tripler, of New York, to perfect a process by which it can be made at a nominal cost.

Liquid air represents a temperature of 320 degrees below zero. A lump of ice thrown into a vessel of liquid air makes the fluid boil, because the ice is so hot next the temperature of the liquid that the heat of ice imparted causes the ebulition of boiling.

It is at this temperature that air becomes a liquid when it is subjected by Mr. Tripler's plan to a pressure of 2,000 pounds to the square inch, sending it afterwards through a coil of pipes, or what is termed " a worm," through openings as fine as a needle. After expanding by this process it cools very considerably, maintaining this temperature.

The liquid air which Prof. Barker experimented with at the University of Pennsylvania was received in an ordinary " milk can " brought from New York. It was not held in iron cylinders as other liquid gases are. It could be ladled out of the can like any other liquid, and mercury and alcohol readily freeze and become solid from the intensity of the cold imparted to these substances.

No application has as yet been made of liquid air, yet it will not be astonishing that it is open to many uses in the arts, and this at the very near future.

### Removing Pulps Painlessly.

It often happens that upon removing pulps that have had arsenical application, it is found that near the end of the root or roots the nerve is extremely sensitive. This is particularly so in case of molar roots. What is the best method of treatment?

Dr. Beacock's answer led me to try his treatment in these cases. I was quite encouraged to continue experiments. Mix on a slab as many cocaine crystals as a drop of carbolic acid will take up. Keep the tooth dry and convey the mixture to the root canals by means of a few shreds of cotton on a broach. Then, with a new broach of proper size work up the canals little by little. Withdraw the broach frequently, going a little farther each insertion. Generally, after a few minutes of patient manipulation you will have the satisfaction of finding the broach reach the end of the root.—R. E. Sparks, Kingston, Ont., in *Dominion Dental Journal.*

### A Useful Flux.

A flux that is exceedingly useful in bridge work is prepared as follows:

Put in a cup—

| | |
|---|---|
| Boracic acid | 1 oz. |
| Ammonia | $\frac{1}{2}$ oz. |
| Carbonate of ammonia | $\frac{1}{2}$ dwt. |
| Bicarbonate of soda | 2 dwt. |
| Water | 4 oz. |

Boil until the fumes of ammonia are no longer given off.

Coat the bridge or other work all over the gold with the flux. Heat it over a spirit lamp to dry it on. Give it another coat, if needed, leaving no part exposed. Then scrape off where it is desired that the solder shall flow, and it will go nowhere else. The work will come out of the heating as bright as when it went in, and the solder will be smooth. The polished surfaces will not be corroded or blackened.—*Western Dental Journal.*

### Fowler's Solution as an Obtundent.

I have been using Fowler's solution as an obtundent for more than four years, and have noted no ill effects in connection with its use. I recognize, of course, that it would not do to teach students to use any of the arsenical preparations as obtundents, but as I am talking to experienced practitioners, I present the subject for your consideration. I do not believe a pulp can be killed by its use. I have tried it and failed; moreover, I have never had a case of pulpitis following its use. Of course, an antidote should be applied after using it. I have used Fowler's solution in double strength (two per cent.) and filled the cavity with cement, and after weeks, upon removing the filling, have found the dentine sensitive.—DR. REGISTER, in *International.*

### FORMALIN—CEMENT ROOT-CANAL FILLING.

Powder:

| | |
|---|---|
| Calc. of sulphur | 200 |
| Hydrarg. bichlor. | 4 |

Mix finely.

Liquid:

| | |
|---|---|
| Acid sulphuric | 32 |
| Formalin | 100 |
| Aq. distil | 100 |

Rub up a few drops of the liquid with sufficient of the powder to form a paste, which, introduced into the previously dried root-canal, solidifies in a few minutes. Fill crown cavity as desired. The small quantity of corrosive sublimate and sulphuric acid in the paste does not have any discoloring or corrosive effect on the tooth.—ABRAHAM, in *Zahndrztliches Wochenblatt.*

### MODELING COMPOUND DAM AND MATRIX.

There is difficulty sometimes in damming three or four teeth for cataphoric treatment. I select a crown impression tray and take an impression where I want to dam the teeth; remove it, cool it, take the modeling compound from the tray and carve away the top of the impression. When replaced in the mouth this leaves a well around the cavities, and then I put the saliva pump in the mouth and relieve overflow of saliva. I use this in preference to napkins, where I cannot use the dam. The adaptation is so close that there is seldom any leakage. This is applicable to cataphoresis and all other treatments. —DR. VAN WOERT.

### NEW METHOD OF ARTIFICIAL RESPIRATION.

Calliano (*British Medical Journal*) describes a new method of artificial respiration, which he has practiced successfully in cases of asphyxia. Place the patient in Sylvester's position, draw the arms up so as fully to expand the thorax, and fix above and behind the head by tying the wrists together. Respiration is then produced by simply pressing with the hands upon the thorax some eighteen or twenty times a minute. The advantages claimed for this modification of Sylvester's method are its greater simplicity, the smaller amount of labor required and lessened fatigue of the operator; the absence of danger from contusion of the shoulder-joints, and the ease with which such a method could be taught to and practised by uneducated and untrained people.—*Dietic and Hygienic Gazette*, February, '97.

### Chloride of Ethyl Spray Hæmostat.

Directed into the alveolar cavity will stop severe hemorrhage after tooth extraction. The cavity should then be filled with cotton wet with tincture of hamamelis.—*Gaz. Med. de Liege.*

### To Polish Aluminum.

Gray or unsightly aluminum may be restored to its white color by washing with a mixture of 30 gm. of borax, dissolved in 1000 gm. of water, with a few drops of ammonia added.—*Amer. Druggist.*

### Warm Solution for Local Anæsthesia.

If the solution of cocaine is warmed before using, its anæsthetic effect is more rapid, more intense and more lasting.—*Lancet Clinic.*

### Bee Sting.

It is reported from France that the fresh juice of the poppy plant applied to recent bee stings gives immediate relief and prevents inflammation.—*Welsh's Monthly.*

### Hæmostatic Mixture.

Antipyrine in powder, added to the alcoholic solution of tannin, forms a sticky, gummy mass which, applied on cotton or sponge, arrests hemorrhage effectually.—D. R. Park.

### An Electrical Hæmostat.

Mr. Lawson Tait has just added to his list of valuable contributions to surgery. His latest invention is an electric hæmostat. an instrument in which a current of electricity is utilized for the arrest of bleeding. The fact of the coagulation of albuminous tissues at 180 Fahrenheit has made this instrument possible, and it takes the form of a platinum wire enclosed in a pair of forceps, the wire being insulated in burned pipe-clay. When an artery is seized by these forceps and the current turned on further bleeding is prevented by the agglutination of the walls of the artery, which effectually prevents a further flow of blood. This invention has succeeded in a great number of cases.—*Brit. Jour. Dent. Sc.*

### CLEANSING PASTE FOR THE HANDS.

A. C. Hewitt says: To half pound pulverized borax add one pound carbonate of soda and half pound fine pumice, with sufficient glycerine to form a paste. Use in place of soap to cleanse and whiten the hands.

### TO FORCE MEDICAMENTS THROUGH DEAD TEETH WITH FISTULOUS OPENING.

Place a pellet of soft, unvulcanized rubber in the tooth cavity; thrust the needle of a hypodermic syringe through the rubber pellet, holding the latter in place. This is superior to, and cheaper than, an abscess syringe.—J. E. DAVIS, in *Ohio Dental Journal.*

### CASTOR OIL EXTERNALLY.

Castor oil heated and thoroughly applied to the abdomen, in children, will often move the bowels as effectually as when given internally.—*Southern California Practitioner.*

### COCAINE ANÆSTHESIA.

The anæsthetic effect of cocaine is materially increased if the liquid be slightly heated (90° F.) before injecting. Anæsthesia sets in sooner, lasts longer, and is more decided. A weaker solution than usual may be employed, with consequent less risk of cocaine poisoning.—*Dental Digest* (trans. from German).

### GELSEMIUM FOR COLD IN THE HEAD.

Gelsemium, says Dr. Loftus, is the most valuable drug known for the relief of the unpleasant condition known as "cold in the head."

When commenced promptly, quick and early, one-drop doses of the fluid extract, administered hourly, usually secure satisfactory results. —*Popular Science.*

### A NEW LOCAL ANÆSTHETIC.

Dr. Pize has discovered a new anæsthetic. He has found that by injecting guaiacol under the skin in small doses, operations can be performed without pain. A committee appointed by the Academy of Medicine has inquired into the value of the discovery and has congratulated him upon his achievement.—*Dental Practitioner and Advertiser.*

### A NEW METHOD OF POLISHING VULCANITE PLATES.

Dr. J. A. Craig, of Macon, Miss., recommends the following method of polishing vulcanite plates. He saturates the cone with chloroform and cuts the plate smooth with pumice. He then uses a soft cloth dipped in spirits of ammonia, rubbing the plate until the surface is hardened and the color restored, the chloroform having a slight bleaching action. Finally he secures his last finish with a very soft cone and soapstone. If the plate should be too thick in the first place, he says that it may be readily cut down with the chloroform and pumice, and he believes that all who try his method will adopt it permanently.—*Items of Interest.*

### NEW METHOD OF BANDING LOGAN CROWNS.

Dr. A. J. Rust, of Chicago (205 Masonic Temple), describes a unique method of banding a crown. In case further information is desired, the doctor expresses a willingness to supply it by correspondence. He describes his method as follows:

"First, adjust the band to the root, and crown in the ordinary manner. Then with a fine stone remove the glazing from that portion of the crown which is covered by the band, and paint this surface with the prepared gold used in China decorating, and burn it into the porcelain; then readjust the band and solder the two together.

"I use a common blowpipe and a small platinum muffle of my own construction, lined with asbestos cloth to prevent the tooth from being heated up too quickly. When I have finished firing, I remove the muffle and tooth to a small box partly filled with dry pumice, to allow of cooling very slowly. If this is carefully done there is no danger of checking the crown."—*Items of Interest.*

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# IMPRESSION MATERIALS AND TAKING IMPRESSIONS.

By T. F. Chupein, D.D.S., Philadelphia, Pa.

At one time I thought that plaster of Paris was the only material fit to take an impression of the mouth. I regarded it as the *sine qua non* for this purpose. So wedded was I to this material that Dr. Staples, of Texas, criticised me as "*An all plaster crank.*" My faith in plaster has not produced *a total* revolution by any means, but I must admit that in edentulous mouths, both upper and lower—especially the latter—Modelling Compound yields an impression, a model from which is vastly superior to an impression taken with plaster of Paris.

But in the use of Modelling Compound the case must suit the material. Wherever the mouth is at all flabby, the front part of the gum soft or flaccid, no adhesion can be obtained from a model of such a case when taken with plaster of Paris. These soft parts *must* be pressed by the plate, as they are pressed by the impression. In the lower jaw, too, we know that it is next to impossible to obtain an impression of the gum which lies next the roots of the tongue, on account of the integuments which fill the mouth at these places. By the use of an impression tray, such as has been devised by Prof. Henry J. Dorr, and illustrated by Fig. 1., these parts are readily obtained and correctly taken.

To use Modelling Compound, the tray should be heated so that the material will adhere to it. The material should be made very soft in hot water. It should be worked in the hands while soft so as to deprive it of all adherent water. It should be laid into the tray smoothly, all creases, folds and ridges obliterated. It must be soft throughout, with no lumpy or hard places. No more material should be placed into the tray than is just sufficient to take the impression; calculating this by the manner the tray fits the gum on which the material is to be pressed. Before inserting it into the mouth, the surface should be passed over the blaze of the spirit lamp so that it presents a glazed, semi-fluid, or semi-melted appearance. The material should be hot, but not hot enough to burn. This is best determined by placing the tray next your own cheek, when, if found too hot to be borne by your own cheek, it will be too hot to be borne by the patient.

In taking an impression of a lower gum, the tray is passed in sidewise, in such a way that the lips will not have to be pulled too violently to get the entire tray into the mouth. Once into the mouth the tray should be brought down steadily on the ridge of the jaw with the handle of the tray on a line with the centre of the mouth.

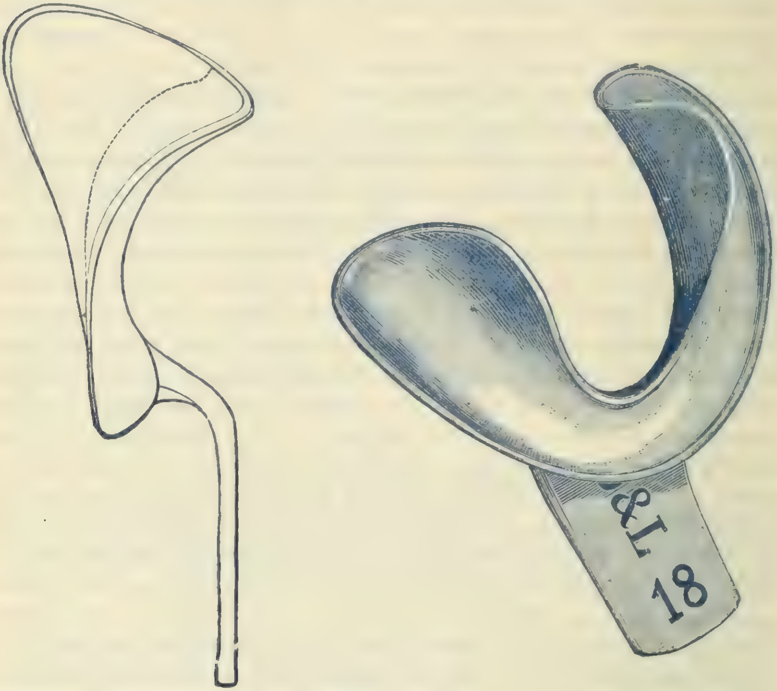

Fig. 1.

The position must not be changed. It is *held in place immovably* until the material hardens. The material should be so hard, before any attempt is made to remove it from the mouth, that any exuding portion of it will refuse to take an imprint from the finger nail. When it is brought down on the edge of the jaw, as above described, should there be any idea that the cheek, or integument of the cheek, on either side, have folded beneath the material, the tray should be held firmly in place with the fingers of both hands—the operator standing on the right *and rather in front of the patient,* while the assistant passes his finger on each side, lifting these integuments away from under the material. This should be done *at once* before there is any chilling or hardening of the material. The material may also be pressed next the gum *at the roots of the tongue* should any exude beyond the tray; but as the tray is especially designed to take care of these parts, this will rarely be necessary. With this material there will rarely be any of the folding of the integuments of the cheeks that we have spoken of. This folding is more apt to occur at these places with plaster impressions than with Modelling Compound impressions. When the impression is removed from the mouth it should be thoroughly hardened by pouring cold or iced water over it. In placing the materal in the tray, any excess of it is best removed by snipping the excess off with a pair of scissors.

In taking an impression of the upper gum, the same rule is used for this material as for plaster of Paris, namely, the back part of the tray, near the soft palate, is carried to place first and the forward part afterwards. The cup is held steadily and immovably in place with the fingers of the left hand pressing on the tray at the palatal vault as well as on the ridge in the region of the bicuspids, while the fingers of the right hand lift the lips so as to permit the material to be pressed on the buccal parts of the ridge, as well as to exclude all air between the material and the gum. In this, as in the other, the material is permitted to get perfectly hard before removal, and is to be chilled as the other was. An impression of this material will adhere to the gum just as firmly as one of plaster of Paris, but this, though often, is not an invariable sign of a perfect impression. On removing the impression from the mouth, should any *streaks or ridges* be noticed on the impression in the neighborhood of the vault, such an impression may just as well be discarded, as a plate made from it will fail to adhere. The impression should be *smooth at all points,* indicating an even pressure of the material at all parts of the mouth.

When the mouth or gum *is firm at all points,* plaster of Paris is *the* material to be used. For partial impressions, also, nothing approaches plaster of Paris for correctness or reliability; and for crown or bridge work, plaster of Paris is the only material "par excellence" which yields certain results.

In *crown work* we have lately had excellent results by a combination of Modelling Compound and plaster of Paris. Dr. Lennox, of

England, first suggested this A small funnel-shaped receptacle is easily made by bending a piece of thin German silver plate, as is shown by Fig 2, and soldering at the laps. After the root end is prepared, the root canal reamed out, and the dowel fitted, this little funnel is filled with Modelling Compound. The compound is brought up to a cone, and the dowel is pushed through to the full extent that it enters the root, as shown by Fig. 3. The material is now softened, the dowel is entered into the canal and carried up to its full length into the root canal. The little funnel is then pressed up against the face of the root; the material pressing away the gum around the root end and yielding a very sharp impression of it.

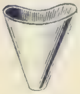

FIG. 2.

After this Modelling Compound impression of the root end has hardened, it may be removed, and all excess trimmed away, which may be readily done with the sharp blade of the penknife. It is then returned to position and plaster of Paris put into the tray and a plaster impression taken with these little funnel devices in place, so as to obtain the position of the adjoining teeth. A piece of tin plate bent into shape like Fig. 4 answers admirably as impression trays for such cases.

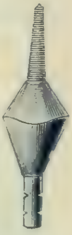

FIG 3.

This mode has advantages over the all-plaster impression for such cases, because as the plaster is introduced into the mouth quite soft, it fails to force the gum away around the root end, and hence does not give as good a model to work by as when done by this combination of materials; besides this, the Plaster is very apt to break in the interdental spaces, where it is very thin, and on this account does not give a perfect impression.

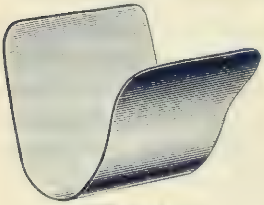

FIG 4.

Fig. 5 represents an impression taken with these little funnel devices and with these combinations of materials, and Fig. 6 represents a model made from such an impression.

The making of these little funnel devices is a very simple operation. A piece of hard wood like a lead pencil is placed into the lathe chuck and the end brought to a point as shown by Fig. 7. A thin piece of pattern lead is bent neatly over the point, yielding a pattern, as shown by Fig. 8. This pattern is laid on a piece of German silver plate, 35 gage, and with a sharp point its form is scribed on the German silver plate. It is then cut out according to the traced lines and bent over the point of the wood pattern, Fig 7. The edges are slightly lapped and soldered, and this completes the operation, yielding a little funnel, as shown by Fig. 2.

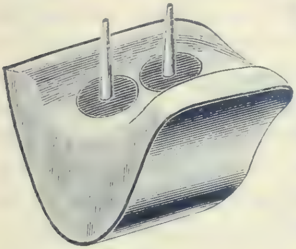
FIG. 5.

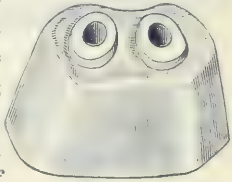
FIG. 6.

It will be noticed that the patterns, Figs. 7 and 8 have marks in them; this is to give the size of the funnel to be made. Pattern number 1 being made on mandril number 1; pattern number 2 on mandril number 2, and so on. Four sizes of these little funnels will be found sufficient for the largest and smallest roots. Should the space between the teeth be too narrow to admit the funnel, it may be *flattened* by squeezing it between the fingers so it will pass into place. German silver, 34 or 35 gage, will be amply thick to make these little devices.

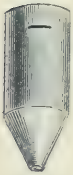
FIG 7.

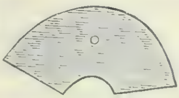
FIG. 8.

It will sometimes be found that the gum of the interdental space is so tough that the Modelling Compound fails to press it away. In such a case we have used the following plan: A thin piece of German silver plate, about 30 or 32 gage, and one-thirty-second of an inch wide is bent around the root end, and drawn tightly by means of a pair of flat-nose pliers. The ends are soldered, and a yoke is soft soldered to the band, as shown by Fig. 9. This appliance is then placed over the root, and an impression is taken with plaster of Paris. The yoke engages in the plaster and brings the band away in the impression. Fusible alloy is cast in the plaster impression, and the fitting of the gold band or gold crown is thus rendered simple.

There is, on the market, a pair of flat nose pliers designed for cutting a screw on the dowels of crowns, the better to secure the crown in the root, when either cement or gutta-percha is used for this purpose. Such a pair of pliers may be easily made by any dentist, as follows: A pair of flat nose pliers are obtained like Fig. 10. The temper is taken out of the noses by heating red hot. Holding the noses tightly together by pressing the handles together, a small hole is readily drilled between the noses, about one-fourth of an inch from the end. A screw thread

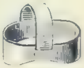
FIG. 9.

is then cut in this hole, when the pliers are retemperd. By placing the tapered dowel in this threaded hole, within the nose of the pliers, and backing the dowel out, a thread is cut on the dowel as shown by Fig. 3. This may be done either before or after the crown is completed. We prefer to do it after. By roughening the end of the dowel in this way, considerable support is gained in inserting such crowns.

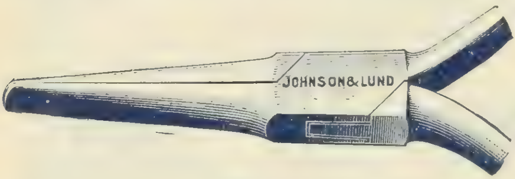

FIG. 10.

## CONSERVATION OF TOOTH TISSUE IN PREPARING CAVITIES.

BY WILLIAM H. TRUEMAN, D. D. S.,* Philadelphia, Pa.

The title of this paper was suggested while looking on at a clinic given before the Pennsylvania State Dental Society many years ago. The tooth to be operated upon was an upper cuspid standing alone. It had previously been filled on each approximal surface; the fillings were both somewhat impaired by the natural wearing down of the tooth tissue bringing to bear upon them more pressure, and at other points than were calculated for when the fillings were inserted some years before, and it was decided to remove them, and to build up the tooth to contour. In the first place, the two fillings were removed, all discolored tissue excavated, and the cavities approximately shaped. The next step was to secure anchorage; to accomplish this, the two cavities were made one by cutting from the lingual surface; this also gave better access to the pulp canal. Next, all weak edges were removed, and all tooth tissue that interfered with ready access to the cavity, then the tooth was ground so as to allow a sufficient thickness of gold at all points between the tooth to be filled and the antagonising tooth, and the edges so prepared as to permit malleting the gold over them. By the time that the tooth was pronounced ready for filling, there was but little more left than a fairly good root; it is not too much to say that scarcely half the tooth tissue present when the operation was begun was there when it was finished. Then began the tedious operation of replacing this lost tissue with gold, carefully packed by the electric mallet. After about five hours' hard work, it was almost completed, utter exhaustion of both operator and patient compelled an adjournment. When completed, it was a beautiful operation, the *presumed* natural size and shape of the tooth being fully restored. I saw it again some year later, in excellent condition, the patient, a manufacturer of a gold foil admirably suited for use with the electric mallet, was very proud of his gold tooth. I thought then, and have thought since, whether two gold fillings, inserted as those which were removed had been inserted, would not have more surely compassed the useful preservation of that tooth with a mere tithe of the cost and the labor expended upon it. Admitting that after a service of ten years they would have to be removed and new ones inserted on the same general lines, there is no question but that it could be done, and perhaps done again, without any greater loss of tooth tissue than was sacrificed to make at the time a filling supposed to be permanent, but which would be considered to have done fairly well if it remains useful a dozen years. These thoughts have been recalled, of late, by the remarks of some of our more advanced operators, advocating radical measures for treating, especially the approximal surfaces. We are told to first remove all carious tissue, then all infected tissue, then to carry the excavation well down root-ward, so as to make the cervical border of the filling well beneath the gum margin, all weak edges are to be removed, the tooth to be cut away so that nothing but gold will appear upon the approximal surface. To secure anchorage, the cervical edge is to be formed into a step; a little nearer the incisive or occlusal edge another step is to be formed, and finally, the filling is to be extended sufficiently far over the crown to resist any tilting-out tendency. How much tooth issue is left after this has been done upon each side of an average bicuspid tooth? What certainty have we that by this means we can better defeat the destructive agents causing caries? What evidence that this will prolong the comfortable usefulness of these precious organs? The mere fact that the advocates of these extreme radical measures are constantly changing their methods is sufficient evidence that their sure and certain instructions of a few years ago have proved faulty.

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* Paper read before the Pennsylvania Association of Dental Surgeons.

There is something very taking in the expression *permanent;* we all desire that our operations shall last a lifetime; never come out, and perfectly preserve the tooth as long as the patient lives. The desire to accomplish this is very commendable. There is, however, more to be considered than the actual retention of the filling. There are limitations to that which *can* be done, and ample room for a wise judgment in deciding, in each case, what can be done, what *we* can do, and what is *best* to be done. It is here that experience has its great value, and in deciding the matter our personal experience must ever have its full weight. It is useless to insist that all teeth are equally strong, and are equally able to resist the destructive agents which surround them, and to insist that all teeth are able to receive any filling we wish to insert, to one who during a long course of practical work has found them otherwise. It is no answer to this to assert that the teachings of science are infallible, while the teachings of experience are warped by inability and desire. We read too often the enthusiastic declarations that some new method has overcome the defects of the past and made certain and sure the arrest of dental caries, and again and again, of improvements to this sure method rendered necessary by its failure to accomplish the much to be desired object. The problem of arresting caries and protecting human teeth from those agents constantly at work to compass their ruin cannot be solved in the laboratory alone; it is too complex, and involves too many uncertain factors to be reduced to an exact science and taught by rule. We may safely say, that no two mouths are exactly alike, and no two sets of teeth are exposed to exactly the same conditions. We may also say, no two operators tread exactly in the same steps, each, if thoughtful and observing, develops an individuality of his own, and finds for himself, the, to him, best way of meeting these constantly varying conditions. The teachings of science are suggestive, and suggestive only.

I hold that a tooth is a precious thing, and that tooth tissue is worth much more than its weight in gold, and feel, when removing it for any cause, that I am taking from the patient that which I cannot by any means restore. I have not as yet overcome an oppressive weight of responsibility assumed the moment excavator, chisel, wheel or burr, passes from carious to sound tooth tissue. While we are beyond question justified in removing a little that we may save much, I very much question the wisdom of the extensive removal of tooth tissue in the effort to secure permanency; especially so when we consider that the term permanent is merely relative. It is well, I think, to remember, that while a filling may be renewed, in whole or in part, the return to the tooth of a single atom once removed from it is an impossibility. We should, therefore, be very sure that the removal is necessary, and have good grounds upon which to base our belief that the sacrifice of a part is likely to prove the salvation of the rest. The preparation of approximal cavities of bicuspid teeth has recently received from the more radical members of our profession a large share of attention, and I have watched with keen interest how, as time passes, they have modified their teachings. A little while ago we were instructed that in all cases the contour of these surfaces should be fully restored, even exaggerated, and so built out that while in close contact at the occlusial surface, a free space should be left at the gum margin to prevent capillary retention of the buccal secretions. This, however, was found objectionable, and we were directed to so build out the gold that it and the gum tissue should fully occupy the interdental space. This in turn failed to fully meet the supposed requirements, as, in a little while, the natural shrinkage of the gum, which usually takes place as we approach and pass beyond middle life, left a space more objectionable than resulted from a less contoured filling.

These fillings failed at the cervical margin, owing, it was said, to the gold not being carried far enough beneath the gum margin to make this admittedly weak point occupy a position where it would at all times be protected; and we were now told to press the gum tissue down to a point beyond that which it would occupy, naturally, when the shrinkage incident to advancing years should take place. Now, who can tell where this is going to stop, short of the apex of the root? Before, however, it was well settled how far this should be done, a variety of problems presented. Dr. Williams presented the result of his investigations which seem to show that decay is started by a microbic fungus finding lodgment upon secluded portions of the teeth, and seemed to offer an explanation of recurring caries at this cervical margin, for, arranged as it generally was, a point was left that seemed to favor this fungus growth. To meet this advance in accurate knowledge, or supposed accurate knowledge, we are instructed to still farther cut away the tooth tissue so as to make the gold extend not only well beneath the gum, but to encroach upon the buccal and lingual surfaces so far as to bring the junction of the gold and tooth tissue to a point where the attrition of the food, etc., shall practically prohibit this fungus forming any permanent lodgment. All this, of course, removes a portion of tooth tissue that formerly was depended upon to assist in retaining the filling; it also brings the cervical margin of the filling to a point where there is but little space between the outer periphery of the tooth and the sensitive zone of the tooth pulp; so, the seat of the filling at this point must necessarily be narrow, too narrow indeed to be at all safe. To overcome this, one or two additional seats are to be cut nearer to the occlusial surface, and to still farther anchor the filling and to enable it to resist the additional leverage entailed by this arrangement, it is to be carried well over the occlusial surface. More than this : it is well recognized that gold, however well and solidly it may be impacted, to retain its position when subjected to the constant strain of mastication, must possess a certain thickness or mass. Therefore, to permit this much, tooth tissue must usually be removed from the occlusial surface of the tooth, to be replaced with gold. Indeed, I recall one writer's remark, suggesting, ironically, that after the tooth had been prepared for filling by fully carrying out these instructions, it was a question whether to fill or cover up the tooth with a gold shell crown ; the latter would, in many cases, undoubtedly prove the most lasting.

Now, are we justified in sacrificing so much tooth tissue? Do we by so doing prolong the comfortable usefulness of the tooth? Would it not be better to cut away less, even when by so doing we may risk having to refill after the lapse of some years? May we not, as I have before suggested, in many cases refill several times, meeting at each new filling and providing for the constantly changing conditions of the teeth and their surroundings, and have at the end a much better and more useful tooth? May not these repeated fillings hold the tooth much longer than one of these master-pieces of operative skill and patient endurance, which when it does break down leaves nothing but a wreck? Is it not, indeed, far better to select some filling material that can be inserted without removing frail walls, that does not call for so much working room, and that tasks far less the manipulative skill of the operator and the endurance of the patient? I know what it is to sit in a dentist's chair from half-past eight o'clock in the morning until five o'clock in the afternoon, listening to the click, click, click, of the electric mallet. I know what it is to thus spend twenty-four hours out of a possible ninety-six, on four successive days, having replaced with gold dentine, which I now think was injudiciously cut away from four upper incisors teeth, two of which failed within ten years, leaving roots exceedingly difficult to crown, sacrificed, I may safely say, to a skillful operator's firmly settled and conscientious belief that well impacted gold was stronger than dentine. I now have, in as good condition as when it was first filled by a gentleman now present, twenty years ago, a bicuspid tooth, as comfortable and effective as though untouched by caries. It has been kept so by repeated refillings with gutta percha, and I question if all the time spent upon it during that long period would suffice to simply prepare it to receive a gold filling according to the more advanced ideas.

In conclusion, permit me to ask the question ; Are teeth best preserved by sacrificing their substance to replace it with another entirely foreign to them, or by, as far as possible, selecting a filling material, and method of operating that calls for the least possible loss of tooth tissue? Do we best compass the desired object by aiming at permanency, or by meeting the conditions as we find them, leaving for the future such attention as the future may require?

## THE DIGESTIVE ORGANS.

By Theodore F. Chupein, D.D.S., Philadelphia, Pa.

The subject which I have selected to read before you to-night may not be one appertaining to a dental society. My object, however, in presenting it is to embody some views contained in the commencement of the digestive tract—namely, the mouth and the saliva—which I do not know of having been alluded to by physiologists.

The alimentary canal in man is from twenty to twenty-eight feet long. It begins with the mouth and ends with the anus.

In the head we find seven openings—namely, "two eyes," "two ears," "two nostrils" and "the mouth," in the rest of the body but two more, "the urethra" and "the anus."

The mouth, the beginning of the digestive tract, is the most important and complex of those openings. It is closed on the outside by the lips, covered on the inside by mucous membrane and gum, having the tongue for the floor, the palate, or roof of the mouth, for its upper boundary, the pharynx at its posterior wall, which communicates with the æsophagus in front and the larnyx behind, etc., etc. With the tongue, teeth and palate words are enunciated, and sentences formed so that our thoughts and ideas may be expressed and conveyed to our fellow man. Besides this, the mouth contains the teeth for the comminution of the food, and the saliva to form it into a pasty or creamy mass fit to be swallowed, the tongue aiding in this, while the act of deglutition is also performed in the mouth by the aid of the tongue, cheeks and muscles of the pharynx. In the mouth, too, we find the nerves of taste, by which articles of food or medicines are either pleasant or disagreeable. Nearly all the indications of disease are found in the mouth, and recognized by the condition of the palate, tongue or mucous membranes. In short, the mouth is the most wonderful piece of mechanism, imbued with the widest ranges of sympathies, functions and uses.

The parts of the digestive organs taken separately are the mouth, the pharynx, the æsophagus, the stomach, the small intestines (which are subdivided into the duodenum, the iejunum and the ileum), the large intestines (which are subdivided into the cæcum, the colon and the rectum).

The word mouth signifies an opening, an outlet, as the mouth of a vessel, the mouth of a river, the opening or entrance to a cavity, etc., etc.

Digestion is derived from the word "digere," meaning "*to dissolve:*" and in physiology consists of the change to which the food is subjected as it passes along the alimentary tract.

The acts of digestion may be divided into six stages, namely: *Prehension*, or the seizing of the food: *mastication*, or the grinding up of the food by the teeth the more thoroughly to mix it with saliva; *insalivation*, the process by which the food is mixed with the saliva; *deglutition*, the process by which the food is formed into a ball by the manipulation of the tongue and swallowed; *gastric digestion*, the process by which the food is churned, tumbled about and thoroughly mixed with the gastric juice of the stomach: and *intestinal digestion*, the process by which the food is still further acted on by the secretions of the liver, pancreas and intestinal secretions, and there taken up and formed into blood.

Physiologists hold that there are *two* kinds of digestion, one of the stomach, and the other of the intestines; but, strictly speaking, I consider there are *three*, one of the mouth, the second of the stomach, and the third of the intestines.

By mouth digestion, I believe that the food, well and thoroughly masticated, ground to the minutest particles, and then so well mixed with saliva as to reduce it to a creamy or semi-liquid mass before it is passed into the æsophagus, and thence into the stomach, render these the very first processes of digestion, by which the teeth and fluids of the mouth play the primary part. We find a substantiation for this belief in the French saying: " Le mangé bien mache´est deja demi degere," which means " food well chewed is already half digested." But we hold also that there is as much importance to thorough insalivation as to thorough mastication. The one cannot be carried out without the other, and this is substantiated by the "indigestion" which is produced, in so many, by the "bolting of food," swallowing it before it is chewed and before it is insalivated. This throws extra work on the stomach, forcing it to do not only its own work, but the work of the teeth and salivary glands as well.

It is not, therefore, astonishing that this over-worked organ—the stomach—breaks down and leaves its victim a prey to all the discomforts of dyspepsia. For even though the stomach is made to do the work of the teeth and salivary glands, there is a difference in stomach digestion to that of mouth digestion, which the stomach cannot perform without the preliminary acts of mastication and insalivation.

The same way that the food is changed in composition by gastric digestion in the stomach, by the chemical action of the secretions of that organ, to prepare it for still further solvent action before it is admitted into the intestines, so is it prepared by the action of the saliva in the mouth before it is fit to enter the stomach.

The glands of the mouth are liberally supplied with nerves, and the irritation of the food in the mouth forces a liberal secretion from them. The viscous fluids flow in great abundance, so that it is estimated that from five to six ounces of saliva are secreted at a meal. These fluids from the various glands must contain elements which fit the food for its entrance into the stomach.

We find that there are *three* glands which pour saliva into the mouth. The parotid, the submaxillary and the sublingual.

*The parotid gland* is the largest of all the salivary glands. It is thus named because it is situated *near the ear*. The weight of this gland varies from one half to one ounce. The saliva from it finds its way into the mouth by means of a duct, tube or conduit, which is two and a half inches long, and is called the duct of Steno, in honor of Nicholas Steno, a Danish anatomist, who discovered it; opening by means of a little mouth situated on the inside of the cheek in the neighborhood of the first and second upper molars.

*The submaxillary gland*, the next largest, weighs about two drachms, and is irregular in shape. It is thus named because of its being situated *below the maxillary bone.* The secretion from this gland finds its way into the mouth by a duct, two and a half inches long, named the duct of Wharton, also in honor of its discoverer, Thomas Wharton, an English anatomist.

The smallest of the salivary glands, *the sublingual,* is thus named from its being situated *beneath the tongue*; the word "lingua" in Latin signifying tongue. The gland is shaped like an almond and weighs about one drachm. The ducts may be distinctly seen, in the shape of two little tubes on either side of the "frænum," or cord of the tongue. The saliva from this gland finds it way into the mouth by the duct of Bartholdi, in honor of the discoverer, who was a Swedish physiologist.

But why should there be three salivary glands? Certainly one could have been made to yield the necessary quota of saliva; hence the thought arises that there must be some use for three glands, otherwise they would not be there.

Nature is not poetic. Nature is entirely utilitarian. If three glands empty saliva into the mouth, why should there not be a difference (small though it may be) in the character of the saliva which each gland secretes?

We have analysis of the saliva, but our analysis consists of an examination of the saliva as it is found in the mouth. No means have been devised as yet, so far as we are aware, to obtain the saliva secreted from *each particular gland.*

It is admitted, however, that all kinds of starchy food are dissolved and turned into glucose or starch-sugar by the action of the saliva on materials of this kind. Hence this proves "mouth digestion."

But these thoughts seem to find a verification in the deductions of Prof. Van Denburg. For some years there has been a dispute whether the bite of the gila is poisonous or not. In a lecture before the Academy of Natural Sciences, at San Francisco, the above authority stated that the saliva of the lower jaw of this monster *is* poisonous, while that of the upper jaw is not. While one would produce death, the other would not. If these deductions be correct, it would seem that there *is* a difference in the saliva secreted from one gland from that secreted from another. Therefore, we contend that the food is subject to *three digestions*, one of the mouth, one of the stomach and one of the intestines; and that there is an influence of the saliva from each gland on the food while it is being subjected to trituration by the teeth, and insalivation from the glands.

With these thoughts we now continue with a consideration of the digestive organs as it proceeds regularly.

When the food is taken into the mouth and is chewed and formed into a bolus, it first passes into the pharynx. This is a muscular pouch at the back of the mouth communicating with the æsophagus. The æsophagus derives its name from the Greek language, signifying "a carrier or conveyer of food." The æsophagus is a cylindrical tube about nine or ten inches in length which pierces the diaphragm and enters the stomach at a point called the "cardiac opening," because this opening is *not far from the heart.* The stomach is an enlarged pouch, larger at the point near the heart and smaller at the point where it communicates with the small intestines. The stomach is a pouch or reservoir about twelve inches long by four or five inches in diameter. The æsophagus connects with the stomach by the cardiac opening, while the stomach connects with the intestines by the pyloric opening. The pyloric opening is a sphincter muscular opening like the anus which connects the stomach with the "duodenum," or beginning of the small intestines. It is called the pylorus, because the word, in Greek, signifies "gate-keeper." When the food is thus churned about in the stomach it seeks exit at this opening, but it is only when this faithful guardian finds it sufficiently digested that it opens the door and permits it to pass out into the duodenum. "*The duodenum*" is the first section of the small intestines. The duodenum is named from its length, being about as long as the breadth of *twelve fingers*. When we say a duodecimo edition of a book, it means that the sheet on which the book is printed is folded *twelve times*. Hence the name. It is in this part of the small intestines that the food is converted into "chyme," and into this part that it is mixed with the "bile" from the liver and pancreatic juice from the pancreas, as also with the secretions of the intestinal glands, which forms the food into "chyle."

The liver is the largest gland in our bodies, and is a part of the digestive tract. It lies on the right side of the abdominal cavity just below the diaphragm. The functions of the liver is to secrete bile and the formation of glycogen, which is a white powder of irregularly-shaped grains without odor or taste, insoluble in alcohol, and commonly known as "animal starch." The liver forms large quantities of "urea" which is the chief solid constituent of the urine. The liver destroys certain poisonous substances absorbed from the intestinal tract, and is, in a manner, a kind of scavenger of the body. It consists of five lobes, which are subdivided again into lobules, cells, capillaries, lymphatic, hepatic and biliary channels. The weight of the liver is between 50 and 60 ounces, or about 3 or 4 pounds. It measures from 10 to 12 inches transversely, by 6 or 7 up and down, and is about 3 inches thick. It is of a brownish-red color. The spleen is an adjunct of the liver, although its office is not yet known; melancholy and low spirits being attributed to it.

The pancreas is a large gland from 6 to 8 inches long. It secretes a limpid fluid, which is used for dissolving of the fat parts of food. It is known, popularly, as the "sweet bread," the Germans designating it as the abdominal salivary gland.

The small intestines are much longer than the large intestines, being about twenty feet long. The length of the small intestines vary in the male and female. In 87 males and 26 females, it was found that the average length in the male was 5 feet 3 inches more than the average length in the female. The longest small intestine observed in the male was 33 feet, the shortest, 12 feet 6 inches; in the female the longest was 29 feet and the shortest 11 feet. The average for males was 20 feet 3 inches, and the average for females was 18 feet.

The "jegunum" and "ileum" form the longest part of the small intestines, the two being about 19 feet in length The small intestines are nearly cylindrical in form, being convoluted, and lying almost surrounded by the "colon" of the large intestines. The "jegunum" takes its name from "dry," "empty," because this part of the small intestines is always found "empty" after death. The "ileum" is the last and lowest part of the small intestines. It takes its name from its peristaltic motion, forcing the food along its length into the cæcum by a series of motions like the walking or creeping of a worm. The food passes from the stomach into the duodenum, thence into the jegunum and thence into the ileum, pursuing a downward course, when it enters the "cæcum" or commencement of the large intestines. The cæcum is known also as the "blind gut" being a sort of *cul-de-sac* or blind alley, from which it derives its name. It is a large pouch into which the ileum opens, and from it we find the "vermiform appendix," a small tube without any apparent office, about as large as the stem of a common tobacco pipe, having an opening about as large as the hole in the pipe stem, and being from three to six inches long. From the cæcum the food finds its way into the ascending colon. The colon is the longest of the large intestines, the ascending, transverse and descending colon being about four and a half feet long. In the colon all the useless portions of the food are pressed forward and carried into and collected into the "rectum." By means of the lacteals distributed over these intestines, the useful parts of the food are converted into blood to nourish the organism. "*The rectum*" is the last part of the large intestines; it is about 6 or 8 inches long, and derives its name from *rectus*, signifying *straight*, the old anatomists believing it to be a straight gut. It has, however, two slight curves. The office of the rectum is to collect the useless parts of the food, whence it is expelled by the last opening of the alimentary canal, the anus, a sphincter muscle which terminates this intestine.

We have thus followed the food in its course from its entrance into the mouth to its expulsion by the anus. The course is downwards after it leaves the mouth, and subsequently the stomach. When it enters the duodenum it travels from side to side, still taking a downward course, through the small intestines, until it reaches the colon, when it ascends first by the ascending colon, then it goes sidewise through the transverse colon, finally going downward again through the descending colon, to be finally collected in the rectum and then expelled; the small intestines being, as it were, surrounded by the large intestines.

We cannot conclude this paper without alluding to the recent wonderful operation of Dr. Carl Schlatter, of Zurich, Switzerland. We all know that men have lived with one leg, one arm, one eye, and even with one lung; but we have been taught that the stomach was a vital organ, the removal of which would result in the patient's death; yet this bold operator, failing to cure the disease of the stomach, for a woman of 56 years of age, which disease would have resulted in her death, conceived the idea of *removing the stomach*. This he accomplished successfully, uniting the duodenum to the æsophagus by stitches and restoring the woman to perfect health. The operation consumed two hours and a half time, while the patient was kept anæsthetized during the whole of this time. The cicatrix was then united and nothing indicated the operation but a slight sinking of the outer parts. There was little effusion of blood, and the woman at first was fed on liquid food. After 12 days she moved about her room, and was then permitted to eat solid food. This was still more wonderful as the woman only had one tooth remaining, so that her mouth digestion must have been necessarily imperfect; up to this writing (Dec. 25th, 1897), the patient remains in perfect health. The operation was performed about the middle of September, a month later she left her bed, and was pronounced a perfectly well woman in the following month, November.

## SELECTED ARTICLES

## THE CHOICE OF A FILLING MATERIAL.*

### BY DR. DAVIS, London, Ont.

In the consideration of this stereotyped subject we shall not attempt the elucidation of anything original or new, but will endeavor very briefly to give a few personal impressions formed regarding the various filling materials, after a number of years of active practice. We shall not strive to treat of anything other than that demanded by our subject; we shall not speak of the great advances which have been made in the filling of teeth for two reasons: first that our text does not require it; and, in the second place, in our humble opinion we have not progressed as a profession as we should have done in this all-important branch of our most noble calling. It is a deplorable fact that prejudice, in many cases, is more powerful in the influence exerted in our judgment, in the filling of teeth, than the great thought of tooth-conservation. I must fill this tooth with this or that material, because I must demonstrate by my acts, that I am in favor of the specific class of filling materials as advocated and adopted by me. Thus it is that teeth of poor structure, of frail walls with decay encroaching on or near the pulp, are filled with a material totally incompatible with the tooth substance and its surroundings. Another consideration which largely influences the operation is, the amount of the remuneration to be received for the performance of the operation. "Doctor, what is the best filling to be put into that tooth?" is the question propounded by hundreds of patients, nay thousands, daily, and the skilled dentist mentally calculates the size of the questioner's pocket-book before replying. If perchance the carriage and coachman await the patient's exit from the offices, the reply invariably is: "Oh, that tooth must be filled with gold;" on the contrary, if the patient shows by the mud on his shoes and his general appearance that he has "footed it," and that "filthy lucre" with him is very scarce, the reply is: "Oh, amalgam, or some cheap filling will do to fill that tooth." Need we say that this is all wrong; we believe that every tooth, more or less, shows indications of the proper material with which it should be filled, and in every case the dentist should be sole judge of the filling materials to be used, and he should honestly insert that material which he conscientiously believes to be the proper filling for that particular tooth. What have we seen, not once, but hundreds of times? that a tooth filled with gold in the mouth of a rich man is decayed cervical wall and generally shows signs of disintegration and demoralization, while a tooth similarly decalcified, and, under analogous circumstances, in the mouth of a poor man, which has been filled with an amalgam made from silver coin or a similar-made alloy filed up with a rubber file, rudely inserted, in an improperly prepared cavity, and imperfectly protected from the fluids of the mouth during the operation, remains in as perfect a condition as the day the filling was inserted. Oh, for the day to speedily come when the dentist will be paid for his manipulative skill, his knowledge of dental pathology and therapeutics; and the time spent in the perfecting of himself in his profession—rather than for the difference in cost of the filling material.

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*Read at London Dental Society.

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But to return to our subject, what should be the great desideratum in the choice of a filling material? We unquestionably answer, "Tooth Conservation." This comprehends everything; manipulative skill being conceded, we say, that a filling, even without beauty, that will maintain the tooth structure by being compatible with, that will save the pulp from irritation through being non-conducting and non-irritating, is a better filling to insert into a particular tooth, even though it has to be renewed in the course of every few years, than a filling which has every appearance of being beautiful, has great resisting power which, in itself, resists completely the action of the fluids of the mouth and the power exerted on it by mastication, and while it *per se* is as good in every way as the day it was inserted, it stands as the Emperor William did when he entered Paris at the close of the Franco-Prussian war, to see the ruins he had created.

This is no fictitious case, we have seen hundreds of cases of this kind. Beautiful fillings, nicely condensed, finely polished, exquisitely contoured, standing intact and beautiful, while the surroundings are those of demoralization, disintegration, ruin, decay, and death. Prejudice, remuneration and beauty in these cases were the governing considerations in the choice of a filling material. The operator has received the money, the patient a short period of beauty, while the poor tooth, to speak vulgarly, "has got it in the neck." This is not only vulgar but true, as it is generally that part of the tooth anatomy that shows first the mischief created by the operator's greed for money, his desire to have people to be his patients: "Who put that beautiful filling in for you?" and also the patient's folly in the desire to have a filling that presents a fine appearance, as if this was only the great desideratum. Let us not be misunderstood, not be misinterpreted; we believe that in many cases gold is one of the best, if not best, materials to fill teeth. In teeth of hard, dense structure, in which the cavity of decay does not imperge on the cervical wall of the tooth, gold can properly and advantageously be used as a filling material. We have seen gold fillings inserted in such cavities, and they stand as monuments to the manipulative skill and wisdom of the practitioner who so successfully inserted them. In these cases we have consideration of the teeth, also beautiful fillings, hence gold was the proper material to be inserted in those and similar cases. Now, in teeth in which we cannot (in view of the fact that we wish to conserve or preserve the teeth) introduce gold,—what materials are at our command? We will not here speak of an ideal filling material, we have no such; we know what its qualities should be, such as regards color, non-conductive, non-irritating, easy of manipulation, etc., but seeing that, like the ideal man, it is not here, but in heaven, we shall deal with what we have.

The first is amalgam—let us first define what an amalgam is. We cannot give a better definition than that of *Prof. Flagg's*, viz: "One or more metals held in combination with mercury by the mercury form an 'amalgam!'" This abused metal was born under most unfavorable circumstances, in fact, in the home of quackery: yet, in spite of its inauspicious birth it has risen above its primitive surroundings, and become a respectable and most worthy member of the noble family of desirable filling materials. No filling material has undergone such tests as the described material. Those who used it were threatened with dental excommunication, and some members of the profession who were convinced of its utility as a conservator of tooth material were formally excommunicated from the American Society of Dentists, for their temerity in using, and also advocating its use to others. These pioneers in dental advancements found that amalgam made from dental alloy unscientifically compounded, rudely and improperly introduced into cavities of decay, imperfectly prepared, "saved the tooth." Thus it was that many a tooth remained in the mouth of the patient to do excellent service for years, instead of being rudely consigned to the dental cuspidor. If this were the result in the past, what should be, and we say is, accomplished with amalgam to day, when it is prepared on scientific principles, when it is accurately tested, and when it is properly inserted into the cavity. True, it has its defects as we said before. No filling material is perfect, notably its color; yet it is better, we opine, to have a badly discolored tooth in the mouth than no tooth at all. Far better a broken down tooth, of poor structure, with frail walls filled with amalgam. With this, we shall remember that the amalgam used shall be such that the necessity of the case demands submarine facing, front tooth or contour. Another desirable filling is gutta-percha; this material has suffered in comparison with other filling materials, on account of defective manipulation. It is not our intention to speak of intermediate fillings, or those that are used to live cavities, hence we shall not mention this, that in large buccal cavities, having frail walls, gutta percha should be the filling material; we remark in this connection, that the gutta-percha should be properly warmed and properly introduced, using for these purposes a gutta percha warmer and instruments specially designed for the exclusive introduction of these fillings. We could go further and speak of zinc phosphate, oxy-phosphate oxy-sulphate and oxy-chloride of zinc and numerous other materials, yet we surmise that we have subserved our purpose, and end our paper with the saying that tooth conservation should be the first consideration in the choice of a filling material, qualifying this statement by the remark, that if a tooth can be saved equally well with a filling that presents a beautiful appearance as with one that does not, the preference should be given to beauty, otherwise the first consideration—tooth conservation—should invariably govern.—*Dominion Dental Journal.*

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## POINT OF CONTACT.

By R. W. Morse, D. D. S., Lansing, Mich.

Read before the Michigan State Dental Society, June, 1897.

The normal set of teeth in the mouth of a human adult offers sixty points of contact which represents about three-fifths of the probable points at which caries attacks the teeth. Why is it that the teeth decay more at this point than others? It is due to the fact that at this point and just away from it toward the cervical margin, the surface is not self-cleansing, and there becomes attached to the teeth a thin film of agglutinated substance, made up principally of micro-organisms. The food in process of mastication does not disturb them. The brush passes over the buccal and lingual surfaces, and still they remain. The tooth pick will dislodge some, but it is necessary to use dental floss, or something of that nature to polish and scour them off. If all surfaces of the teeth were kept cleaned of this accumulation, we would soon find that our profession was considerably crowded; but the laity have not been sufficiently drilled on this method, and those who have been instructed do not find the time to do it thoroughly, hence we are called upon to correct the results of their defiance of Providence. This agglutinated mass of organisms secretes acids—at first attacks the cement that binds the enamel rods together, on account of its not being as dense as the enamel rods. Then the rods themselves are decalcified, and gradually disintegrated leaving an opening into the surface. In such openings, as fast as found, the microbes establish themselves and from now on have it all their own way unless the cavities are scientifically stopped by some member of our profession. It is our duty to our patients to instruct them in the use of dental floss and brush to thoroughly cleanse the teeth. Abrasion is the only means by which this can safely be accomplished, and then it is necessary that it should be attended to religiously. Mouth-washes aid in making the microbes uncomfortable, but do not remove them. Careful brushing and the use of dental floss in connection with mouth-washes is the best method of attack.

But the thing that I wish to 'call attention to particularly is the restoration of this point of contact by filling. Dr. Black in his talk before the Chicago society, in February, tells of the new method of cutting away the proximal aspects of the molars and bicuspids that are affected by caries, and replacing with large metallic surfaces properly shaped to control the proximal space, and thus offering a roost for the microbes that they cannot destroy with their acids. I quite agree with the doctor in the main, on the counts he has made—in the case of considerable destruction of the enamel and dentine at this point; but I feel that there is a class of cavities that can be treated in a less heroic manner with good results. The moderate and small-sized cavities around which the enamel is not affected would be of this type. Take two moderate-sized proximal cavities as an example in teeth of normal shape and position. At first examination, if time permits, place between these teeth a pellet of cotton saturated with chloro-percha. This is repeated at intervals of three or four days, increasing the size of the pellet until the space is sufficiently large to permit of *thorough* preparation of cavities and of filling and finishing the fillings, and when the teeth resume their natural position the oval surfaces of the fillings should come in contact, and at no point should the enamel on either tooth touch the opposing filling or tooth. The point of contact should be as near the occlusal surface as consistent with the case. Treated in this manner, the margins of the enamel are as self-cleansing as under the best conditions that nature provides and gives the gums in the proximal space good protection. Dr. Miller and Dr. Black have for some time maintained that the fluids of the mouth were responsible for carious teeth, only as they aided or opposed the growth of organisms. Dr. Williams has demonstrated this to be the fact, and accounts in this way for predisposition to decay, whether the teeth are what are known as hard or soft teeth. In cases of marked predisposition it is probably necessary to apply the method Dr. Black advocates. With incisive teeth we see many cases of recurrence of decay at the cervical and at the incisive margin of cavities, that were well prepared and carefully filled, but when they resumed their natural position the point of contact was at either of the margins of the enamel rather than the filling. This result probably was due to not having sufficient space by separating to contour the filling sufficiently to allow of their being finished, and still have the contour project beyond the margins and act as a buffer to hold the enamel apart, so that they may be cleansed and cleanse themselves to a degree.

I wish to appeal from the decision and practice of some good men in the profession that the use of the matrix is in opposition to these results unless an extreme amount of separation has been procured, while the making and the placing of the filling is a little easier. The completed filling does not often meet the requirement of the restoration of the original tooth.

In crown work, where the space is contracted, there is a liability to having straight surfaces in contact that it is desirable to avoid. Separating will often correct this condition so that cleansing spaces will remain and the gum septum be restored.

In conclusion I wish to appeal to the dental profession to be more thorough in separating teeth to be filled, no matter what filling material is to be used. Make the point of contact of a shape that would best protect the proximal space from the encroachment of food. Have the fillings rest against each other holding the enamel apart from touching adjoining tooth or fillings. This metallic point of contact acts as a protection to the tooth from re-decay as a sled runner is protected from wear by the iron shoe fastened upon it.—*Ohio Dental Journal.*

## OBITUARY NOTICE.

### George B. Morris, D. D. S.

Dr. George B. Morris died at his residence, Morgantown, West Virginia, March 11th, 1898, in his 66th year.

Dr. Morris was one of the most prominent dentists in his native State. He commenced the practice while quite a young man, and being always progressive, he attended Dental College in this city and graduated in 1867. It was while here that we became acquainted with him, and formed a friendship that lasted through life. He returned to his home and soon built up a large and lucrative practice.

He was a skillful and careful operator, and by excellent work won confidence and success, which, with judicious investments, enabled him to leave quite a large estate.

But it was more the attributes of his heart that endeared him to his fellows. Quite a number of students were prepared by him for college, and had the hand of friendship extended to them on their return to enter the practice of their profession. His mind was too expansive to entertain jealousy, and his nature was characterized by kindness, honesty and industry.

He had his sorrows—one, the loss of his only son, in 1882, at the age of 23; and about two years ago his wife, who had been his companion for so many years, died. But with all he retained his cheerfulness and interest in his surroundings.

He has passed away, but the memory of his bright and useful life is still the inheritance of those among whom he mingled.

## BOOK NOTICE.

Descriptive Anatomy of the Human Teeth. Fourth edition. By G. V. Black, M.D., D.D.S., Sc.D. Philadelphia, Pa. The S. S. White Dental Manufacturing Company, 1897.

We have received the above volume, so great a contribution to our dental literature. The four editions which it has passed through since its first presentation is the best evidence of its claims and appreciation by student and practitioner. We find the volume greatly improved in this last edition. But "*Cela va sans dire*" when we think of its source and know of the painstaking and industry of its gifted author.—Ed.

Annual meeting of the Massachusetts Dental Society convenes at Mechanics Building, Boston, June 1st and 2d.

This convention promises to be one of the most successful in the history of the Society.

Extensive exhibits of material by the various dental supply houses and completed operations both in the mouth and in the model by leading dentists, and dental laboratories will be a leading feature.

Full information upon application to F. S. Belyea, Brookline, Mass., Chairman Committee on Hall and Exhibits.

## PRACTICAL PLACE.

### Cleansing Clothing.

Mullerson's preparation is a mixture of turpentine, 26½ parts; ammonia solution, 19 parts; methylated spirits, 25 parts; ether, 2¼ parts; acetic ether, 2¼ parts, and water, 25 parts, all by weight.

### RELIEF FROM IVY POISONING.

Complete and immediate relief from the effects of ivy poisoning is reported in the *Medical World* by Dr. W. L. Shanks. His patient was swollen from head to foot, but in an hour after bathing in a solution of sodium hyposulfit was attending to business as if nothing had happened.

### REMOVAL OF DEVITALIZED PULP FROM ROOT CANALS.

Adjust rubber-dam. Apply sulfuric acid—a 40 or 50 per cent. solution—directly over opening into canal. The pulp becomes rigid, shrinks, and its removal is a comparatively easy task.—A. H. **MEBES**, Trans. fr. *Den. Digest.*

### ROOT TREATMENT—SILICO FLUORIDE OF MERCURY.

This salt has been recommended as being twice as energetic as corrosive sublimate as an antiseptic. It is far less poisonous than the latter salt, hence it deserves notice. It is used in aqueous solutions, 1 to 1,000.—*Pharmaceutical Era.*

### A COUNTER IRRITANT.

Wet a square of paper fibre with vingar, cover it with red pepper, not too copiously, and apply to the gum. A small piece of rubber dam may be placed between the cheek and the paper to protect.—**DR. HARLAN.**

### AFTER-PAINS OF EXTRACTION.

A single drop of nitro glycerine—one per cent. solution—in half a glass of cold water is potent and reliable, and lasting in its effects. It is also a marvelous benefit in neuralgia and for the bad headaches following dental operations.—ED. H. BOWNE, in *Items of Interest.*

### TREATMENT OF PULPITIS.

In the event of pulpitis or inflammation of the pulp, cleanse the cavity by using warm water and apply a small amount of pulverized thymol over the pulp. If the pain still continues, add one drop of chloroform to the applied drug and immediate relief will be afforded.

### MAD DOG BITE.

A professor in the University of Klausenburg claims to have compounded a solution which completely neutralizes the poison introduced into the system by the bite of a mad dog. It consists of chlorin water, salt-brine, sulphuric acid, permanganate of potassium and eucalyptus oil.—DR. FOWLING, Albia, Iowa, in *Dental Digest.*

### CEMENTING BANDS AND CROWNS.

Dry the tooth and paint with shellac varnish before applying the cement. This gives durable adhesion, and should the cement dissolve the shellac will protect the tooth and prevent decay under the band.—W. G. LANGE, in *Dental Cosmos.*

### PREVENTION OF TARTAR.

Rinse the mouth freely once a day with water in which a pinch of alum has been dissolved. It is harmless to the teeth and keeps the gums in good condition, preventing the accumulation of tartar.—C. N. PEIRCE, in *International Dental Journal.*

### CATAPHORESIS.

A danger in the use of cataphoresis is that the operator may approach too near the pulp, or even expose it. This does not condemn it, but should make us more careful. We should know the anatomy of a tooth so thoroughly that the pulp would be in no danger from our burs. I think cataphoresis a good thing, and know it will obtund; but am not sure it may not injure the pulp.—DR. MARSHALL, in *Review.*

### DENTAL INSPECTORS FOR SCHOOLS.

The Ontario Board of Health recently adopted the following resolution: "That dental inspectors be appointed by local boards of school trustees to periodically visit schools and examine children's teeth, and that a dental hospital be started in Toronto for the benefit of poor children; and these recommendations be urged upon the attention of the minister of education."—*Medical Mirror.*

### A COVERING FOR SLIGHT WOUNDS.

As a covering and protection for slight wounds on the hands it has been recommended that an application of collodion and Peru balsam (1 : 10) gives excellent results. This will remain intact and be perfect for days; and washing the hands with soap and warm water does not disturb it in the least. It is easily prepared and yields satisfactory results.

### LINING FOR SENSITIVE CAVITIES.

Aristol in combination with chloro-percha makes an effective lining to sensitive dentine or for pulp capping. It is non-toxic, non-irritant and possesses properties similar to that of iodine. In ethereal solution it is germicidal. To Dr. Russell H. Cool the credit of this combination is due.—**DR. W. F. LEWIS**, in *Stom. Gazette.*

### A SUBSTITUTE FOR GOLD FOR DENTAL PLATES.

There is yet needed a metal which will take the place of gold in the making of bases for dentures. Many have advocated aluminum, but this metal does not favor us with the desirable properties of gold. A new metal which seems to have the requisites of the royal metal, and which is less costly, has of late attracted considerable attention in Germany. It is composed of silver, 3.53; platinum, 2.40; copper, 11.71. This metal is elastic and takes a most brilliant polish. It is not acted upon by the fluids of the mouth and answers the same purpose as gold. Dentists who are interested in a substitute for gold will do well to experiment with this formula.—Trans. by **DR. B. J. CIGRAND**, from *Zahnaerztliches Woch*, June, 1897.

### AROMATIC SULPHURIC ACID.

If this be spilled upon black walnut furniture and the color be changed, it can be restored by applying chloroform to the spoiled surface.—**F. J. FESLER**, in *Dental Digest.*

### AN EFFICIENT DEODORIZER.

If an old crown, piece of bridgework, or any similar piece of repair work is dipped into electrozone, the offensive odor is instantaneously destroyed.—**A. H. PECK**, in *Dental Review.*

I can endorse the above with emphasis.—**ED.**

### RELIEF OF PAIN AFTER EXTRACTION.

Sig.—Apply in socket on pledget of cotton.

2. A potent and reliable remedy for the immediate after pains of extraction is amyl nitrite. The patient to inhale the preparation about three or four seconds and then remain quiet in the chair about five minutes or until the amyl nitrite has spent its primary force.

3 Dr. Thomas says for severe pains after extraction syringe socket well with hot water, which will relieve it almost immediately. Dr. Hays recommends adding a little tincture of aconite to the hot water and afterwards dressing with campho-phenique.

4. A single drop of nitro-glycerine—one-per-cent. solution—in half a glass of cold water is potent and reliable, and lasting in its effects. It is also a marvelous benefit in neuralgia and for the bad headaches following dental operations.—*Dom Dent. Jour.*

### SEPARATING MODEL FROM IMPRESSION.

Drop model and impression into hot water for a minute or two, after which they will separate without the least trouble, leaving the model much smoother than if whittled out. Another model, if desired, can be made in the same impression, as in nearly every instance the impression will come off in such large pieces that they can be placed back in the tray and fastened with a little wax.—J. A. ROBINSON, in *Dental Weekly.*

### BLOOD STAINS.

Dr. Blenkiser in the *Scalpel* says that surgical instruments, sponges, the hands of the operator and blood-stained articles may be readily cleansed by washing them in a tepid solution of tartaric acid and rinsing in water without soap.—*Dental Digest.*

### FORMALIN IN DENTISTRY.

Lepkowski announces in the *Przeglad Lek.*, 1895, Nos. 20 and 22, that he has found formalin very effective in cases of acute pulpitis, when even after the tooth has been filled the pain ceases in a few hours. Also after extraction of the sound pulp, in cases of incipient periostitis, and where the pulp is changed into an ichorous mass. He first cleans the teeth as perfectly as possibly, and then introduces a cotton wad dipped in formalin, which he covers with a staniol plate, on top of which he puts the complete filling. A moderate pain follows for several hours, if the nerve had not been entirely killed. Formaldehyd kills the sound pulp completely, with no greater pain than accompanies the use of arsenic paste, with this advantage, that the tooth can be filled at once, without further cleaning. He hopes that this treatment will be found all that he expects from it at present. —*Centralblatt f. Chir.*, February 8.

### TO PREVENT WEEPING GUM.

Before mounting a crown on a root or abutment, or filling a labial cavity where a clamp or the dam cannot well be applied, a wisp of cotton on a broach, dipped in trichloracetic acid and passed gently under the gum margin, will prevent the weeping of the gum, thus keeping root and cavity dry. It is also a splendid styptic.—*American Dental Weekly.*

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## SUCCESS OF THE VIENNA TREATMENT IN EFFECTING THE PASSAGE OF A SET OF FALSE TEETH.

A man, aged forty-two, swallowed a set of teeth while taking a drink of ice water. He made every effort to dislodge it by coughing and retching, but without result. His wife pounded him vigorously between the shoulder blades. The plate passed down the œsophagus with a sensation of scraping, followed by a feeling of relief. He was given two large pieces of apple to swallow, which he did without difficulty. The plate contained two central incisors and the left first molar, and having at each end a clasp. Measurement of plate was: Greatest length from tip to tip one and three quarter inches; the greatest width was three-fourths of an inch. The clasp encircling the left second bicuspid was of gold, and projected one quarter of an inch from the plate. The clasp upon the right side clasped right cuspid, and projected one-eighth of an inch from the plate. It was explained to the patient that it would not likely pass the pylorus, also the danger if it did pass of being caught at some portion of the intestinal tract, and cause obstruction or perforation with fatal consequences. He declined to remain in hospital and also to take an emetic. He was told to drink copiously of lukewarm water and mustard, and to eat only mashed potatoes for the next forty eight hours. The patient returned the next afternoon. On reaching home he had taken a pint and a half of warm water with a tablespoonful and a half of Coleman's mustard. This failed to nauseate him but put him to sleep. At 2 A. M. he awoke and ate a large plate of mashed potatoes. After sleeping he again ate heartily of mashed potatoes at 9 A. M. He slept for an hour, and soon after 10 o'clock dressed and lay quietly on a lounge. Shortly before noon he felt a "scratching sensation" in left iliac fossa over the line of the sigmoid flexion of the colon, attended with an impulse to evacute the bowels. This he did, and obtained a normal stool. Again in ten minutes he had another motion, discharging a large mushy mass, in which the teeth were discovered. There were large pieces of shaved beef, as well as the potatoes protecting and coating the plate in its passage through the intestines.—HENRY L. WILLIAMS, M. D., in *Therapeutic Gazette,* January 15th, 1897.

## Diagnosis for Conserving the Pulp.

Dr. J. Y. Crawford speaks very interestingly on this subject, and his method is worthy of consideration: Put on the rubber dam, dry the cavity and remove the decay; note carefully the entire field of dentine exposed by decay and your operative procedure; if the dentine is hypersensitive or normally sensitive throughout the entire field, you may hope to conserve the vitality of the pulp, uuless something is wrong in your operative procedure. But if in the corner nearest the point of exposure the dentine shows opacity and is not sensitive on that side, while it is sensitive in other portions, you may know that that side has been profoundly impressed by the onslaught of inflammation; that that portion of the pulp is not performing its functions. Get blood at the point of exposure, and as the inflammation is reduced, you will note the dentine becoming more and more sensitive. This is a point of the greatest importance in deciding whether or not to try and save the pulp alive. The contents of the tubules may be only paralyzed and temporarily inactive, but if you fail to get a ready response, as above, it is more prudent to wait, but if there is no degenerated portion of the pulp you may hope that nature will resume her functions; that you may get the mastery of the disease—convalescence—recovery, and the vitality of the tooth be preserved as though the pulp had never been exposed.—*American Dental Weekly.*

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## A Useful Modeling Compound.

| | | |
|---|---|---|
| Stearin | 25 | grammes. |
| Copal, semi-soft | 25 | " |
| Talcum, powdered | 50 | " |
| Carmine | 0-5 | " |
| Oil, rose geranium | 6 | drops. |

—Dr. David, in *Journal de Pharmacie.*

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## Root Perforation.

A clever writer has said that the best treatment for perforation is the preventive treatment. Dr. Register, in the *International Dental Journal,* says:

If in reaming canals we perform the operation very carefully, it will be found that as the instrument approaches or touches the cementum, the patient will give evidence of pain; if the patient be previously directed to state when sensation occurs, perforations should never occur. When he finds that the instrument (the reamer) has invaded the cementum, he sterilizes the canal thoroughly, and is careful to exercise no pressure in placing the root-filling.

Those cases of perforation near the apex which he has encountered, he has treated after one method. Pack in the canal, and against the pericementum at the perforation, a small quantity of salol, and over this place a cone of zinc phosphate. Of course, the salol disappears, as it always does, after a period when used as a canal filling; but he believes that it performs its office as an unirritating antiseptic while it lasts.

One of the best ways to treat a perforated root, when the canal is accessible, is to whittle a piece of wood to the length and size of the canal, trying it in to ascertain that it does fit; then make the wooden point a little smaller and wrap around it, to the depth of the canal, a piece of very thin, well annealed platinum foil. Dry the canal and coat the platinum with a thin varnish; then push the platinized wood point to the end of the canal, and gently remove the wooden point, leaving the platinum in the canal. Blow in hot air to hasten the hardening of the varnish, and then proceed to fill.—Ed. *American Dental Weekly.*

## To Separate Cast from Impression.

When dry stain the impression with thin shellac. Spread a thin film of wax along the edge of the impression and soak for two or three minutes in a solution of soap. Just before pouring wash off the soap with a dash of cold water. Dry well, then immerse for a minute or two in boiling water. The impression can be easily broken from the cast.—W. Buzzell, in *Ohio Den. Journal.*

## Character in Walking.

Quick steps are indicative of energy and agitation.

Tip-toe walking symbolizes surprise, curiosity, discretion or mystery.

Turn-in-toes are often found with preoccupied, absent-minded persons.

The miser's walk is represented as stooping and noiseless, with short, nervous, anxious steps.

Slow steps, whether long or short, suggest a gentle or reflective state of mind.

Where a revengeful purpose is hidden under a feigned smile, the step will be slinking and noiseless.

The proud step is slow and measured, the toes are conspicuously turned out, the legs straightened.

The direction of the steps wavering and following every changing impulse of the mind inevitably betrays uncertainty, hesitation and indecision.

Obstinate people, who, in argument, rely more on muscularity than on intellectual power, rest the feet flatly and firmly on the ground, walk heavily and slowly, and stand with legs firmly planted and far apart.—*Home Queen.*

### Aluminized Gutta-Percha.

| | |
|---|---|
| White gutta-percha | 8 parts. |
| Aluminum filings | 5 " |
| Oxide of Zinc | 1 part. |
| Whiting | ½ " |

Easily manipulated, and when firmly packed holds its position well in the cavity without bulging.—F. W. Bliss in *Pacific Stom. Gazet.*

### Relief after Extraction.

A pledget of cotton dipped in a saturated solution of camphor in chloroform, placed for a few moments in the socket, will almost instantly afford relief after extraction. Remove as soon as pain ceases.—D. W. Baker.

### Danger in Fruit.

Of late we have heard much about appendicitis, and a great many people who are fond of fruit and who need it to keep in a healthy condition discard its use through fear of being attacked by it. As a fact, the disease is not any more common than it used to be, and it is foolish for persons to deny themselves the pleasure of eating fruit through fear of microbes or appendicitis because, perhaps, one in a million persons happens to get a seed in the "appendix." There are, however, precautions which it would be always well to take; for example, all fruit with skins on should be washed and peeled before being eaten—especially fruit exposed in the street, and where dust and flies can have access to it. Few are aware of the danger of food contamination by flies. They are great scavengers and are not at all discriminating as to what they eat nor where they settle. They pass at one bound from an infectious carcass, a foul ulcer, or a mass of filth to the apple, pear, or peach, and with dirty feet and proboscis run over it and contaminate it. Hence all fruit should be first washed and dried and then peeled.—*Family Doctor.*

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# THE CONSTRUCTION OF CROWN AND BRIDGE WORK.

By Theodore F. Chupein, D.D.S., Philadelphia, Pa.

[FIFTH PAPER.]

We next propose to describe the manner of constructing an all-gold crown by "Electrical Deposit." The first procedure in this, as in the construction of all crowns, is the preparation of the root. In the preparation of the root for all-gold crowns there is no necessity of cutting the root down to the gum level. Indeed, it were better, and will enhance the stability of the operation, if the remains of the root stand about one thirty-second of an inch above the gum level. The points of similarity will be the disinfecting of the root canals and the preparation of the root end so as to obtain parallel sides.

The first procedure—supposing we are about to construct an all-gold crown for a bicuspid—would be to obtain a natural tooth. The measure of the root end having been taken by the dentimeter, this measure is tried on the root of the natural tooth *at its neck.* If the root of the natural tooth be *too large* it may be ground carefully either with carborundum wheels in the dental engine or in the lathe. If *too small* the circumference may be increased by a film of wax melted over this part, so as to make it correspond in size to the circumference of the root end in the mouth. The crown of the natural tooth is then tried in the space in the mouth to see if this be correct. This should pass between the adjoining teeth *easily.* There should be a space, corresponding to the thickness of a visiting card, on either side of the proximate natural teeth. This space may be obtained either by grinding the natural tooth, should it be too large to pass between, on each of its proximate sides *slightly*, so as not to mar its shape, or by grinding the natural teeth in the mouth on these surfaces slightly also, *but preferably the former.* The object of this is to compensate for the thickness by the electrical deposit.

The natural tooth is then taken in the left hand, and, with a lead pencil, a line is drawn on it from the point of its buccal surface all along the crown and root, passing its foramen, continuing along its palatal surface and over its masticating surface until the line reaches the point of departure, thus dividing the tooth with the pencil line in two halves. A piece of wax is then softened. This should be about the size of a half dollar and about four times as thick; and the tooth sunk into the softened wax up to the line marked upon it. As the wax will curl in this procedure, the exact halving will have to be farther accomplished with the warmed wax spatula so as to bring the wax *squarely* up to the line. The tooth thus treated is shown by Fig. 70. This is thinly smeared with oil and plaster of Paris, mixed free of all bubbles, poured over it. When the plaster hardens the wax is removed, and guide holes are then made into the plaster, as shown by Fig. 71. This is again coated with the parting material, wrapped around with a piece of paper and plaster of Paris poured on the reverse. When these two matrices are separated, as shown by Fig. 72, the two plaster matrices are separated, the natural tooth (which served for the model) removed and an inlet cut, as is also shown by the engravings (Figs. 71 and 72). The two halves are held together by an elastic band. Fusible metal is melted and poured into the plaster matrix through the inlet. This produces a metal tooth the same as the natural one, from which the matrix was made, Fig. 73. There is likely to be a slight burr on the sides of the metal tooth where the halves of the plaster matrices came together, but this may be filed off and made smooth. That part of the metal which filled the inlet is now filed or sawed off, and a small hole drilled through to enable the conducting copper wire to be attached to the model. This is shown by Fig. 74. The metal model is now submerged into the gold, silver or copper solution, and connected with the electric battery.

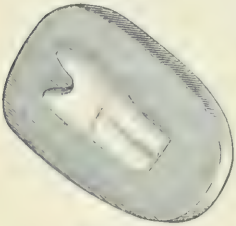

FIG. 70.

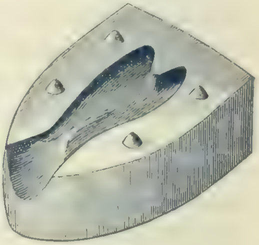

FIG. 71.

For experimental purposes (or copper deposit) a simple battery may be constructed, as shown by Fig. 75. It consists simply of a glass jar, a porous cup, a piece of sheet zinc, and a copper rod. The glass jar is half filled with a *saturated solution* of "blue stone" or sulphate of copper. The porous cup is filled, half full, with a solution of sulphuric acid and water. A piece of sheet zinc is made perfectly clean by scrubbing it with a piece of rag dipped in a solution of sulphuric acid and water. When thus cleansed, it is slightly amalgamated, on both surfaces, with a few globules of mercury applied with a rag. The object to receive the deposit is attached to the copper rod, and suspended in the solution of blue-stone, the zinc plate is also submerged about three fourths of its length in the solution of sulphuric acid within the porous cup, and likewise connected to the copper rod by a fine copper wire. One pound of blue-stone will make three pints of a saturated solution. The blue stone is best dissolved by pouring boiling water on it, and stirring frequently. The strength of the solution of sulphuric acid is about one part of acid to ten parts of water. It should be made in a glazed vessel by pouring the water, gradually, on the acid, and stirring this with a glass rod. If all the water be poured on at once, considerable heat is evolved, which is apt to crack the vessel. These solutions, when cold, are placed in the two vessels — the acid in the porous cup, the copper solution in the glass vessel.

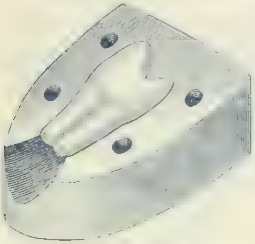
FIG. 72.

FIG. 73.

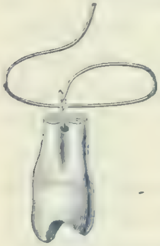
FIG. 74.

The deposit begins very promptly. The object should be removed every half hour or so, and the whole surface brushed over with a scratch brush. The object should be held with tweezers while doing this, as the handling with the fingers is detrimental, all grease or dirt of any kind attaching to the object in the slightest degree defeating the operation. It will take about five or six hours to obtain a deposit of sufficient thickness for a crown.

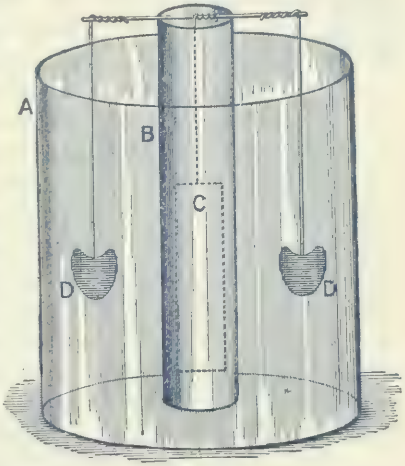

FIG. 75.

This length of immersion will give a thickness equal to about 28 or 30 of the gauge plate when done with copper solution.

The crown is then removed from the solution and sawed off a little above the gum margin. It is then held with tweezers in the flame of the spirit lamp, or Bunsen burner, when the fusible metal melts and falls out, leaving a perfect shell representation of a natural crown.

It will be found that the metal has deposited somewhat granular, but by means of small corundum wheels and points in the polishing lathe, a perfectly smooth surface may be obtained when the shell may be polished. Fig. 76 represents the finished crown.

These crowns could be made of silver and afterwards thickly coated with gold for economy sake; but, if preferred, the deposit may be made entirely of gold.

Should the neck of the crown be too close a fit it may be stretched a little by hammering on the horn of the bench anvil after annealing. A bicuspid crown, such as is represented by Fig. 76, will weigh, after being submerged in copper solution for six hours, about 18 grains.

If the operator desires to make a crown of silver, such as we have described, a silver solution will be necessary. To make the silver solution the nitrate of silver is used. This may be obtained from a druggist, or the dentist may prepare it himself. If the dentist desire to prepare it himself, the manipulation should be conducted either in the open air or within the fire-place where the fumes of nitrous gas may escape up the chimney.

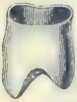

FIG. 76.

Nitrate of silver is prepared as follows: It is best always to use pure silver, because coin silver always contains a little copper. It is best also to have it rolled quite thin and cut in small pieces, as the action is more prompt in this form. Take of silver two troy ounces; nitric acid two and a half troy ounces, and about a half ounce of rain or distilled water. The acid is mixed with the water, in small quantities at a time, in an evaporating dish, and the silver added to the mixture. A glass funnel is inverted over this with its edges within the evaporating dish. This is set within the fire place so that the fumes of nitrous gas may escape up the chimney, if the manipulation is conducted indoors. The evaporating dish is set in a tin or iron plate filled with sea sand, and this placed on the basket of the Bunsen burner, Fig. 77, when gentle heat is kept up until all red vapors and ebullition cease. The funnel is then removed and the heat increased, and the mixture evaporated to dryness. The dry mass is melted, and the heat continued with constant stirring, by means of a glass rod, until all the free nitric acid is dissipated. The mass, when cold, is dissolved in six fluid ounces of rain water, when all the insoluble matter subsides, and the clear solution carefully decanted. The residue is then mixed with a fluid ounce of rain water and filtered through paper. The filtrate is then added to the decanted solution, when it is evaporated until a pellicle begins to form. It is then placed in a warm place to crystallize. The final operation consists in draining the crystals until dry. The crystals of nitrate of silver thus obtained should be kept in a wide-mouth, well-fitting ground glass stoppered bottle.

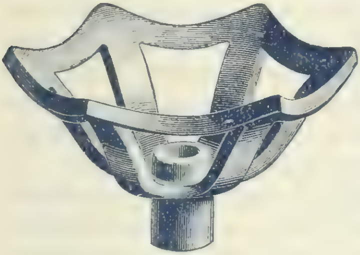

FIG. 77.

### THE SILVER SOLUTION.

To make this solution for the deposition of silver, dissolve the nitrate of silver crystals in three pints of rain water. This should be done in a glass vessel or a stone jar glazed on the inside. A little common salt is added to this—a pinch at a time. This will cause the silver in the solution to fall to the bottom. When all the silver in the solution ceases to fall the addition of salt must cease. The water is then carefully decanted and the chloride of silver, which was precipitated in the jar, is washed several times with rain water.

A half pound of cyanide of potassium is added to a quart of rain water, and then added to the chloride of silver in small quantities at a time. This addition forms the silver cyanide or silver solution. When making this solution, it should be stirred with a glass rod until all the cyanide solution is added to the silver precipitate.

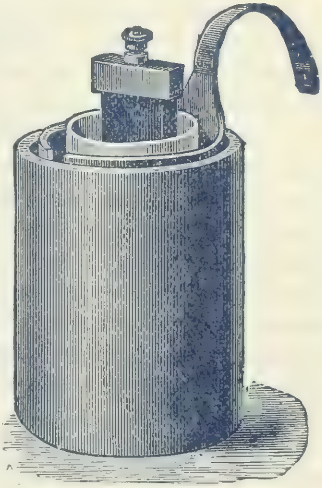

FIG. 78.

To deposit a crown of silver, the Bunsen battery is used. Fig. 78 represents the Bunsen battery. This consists of an outside glass jar in which a solution of sulphuric acid and water is put: one part of acid to ten parts of water. Into this is placed a cylinder of zinc. This should be scrubbed clean and well amalgamated with mercury. Within this again is placed a porous cup, and within the porous cup a rod of carbon. The porous cup is nearly filled with eight parts of a saturated solution of bichromate of potash to one part of sulphuric acid.

To deposit a crown of silver, the metal model is placed in the vessel containing the silver solution, being attached, by means of a fine copper wire, to the zinc cylinder of the battery. Another wire, having a piece of fine silver on the end of it, is also submerged into the silver solution, and the other end of this wire is attached to the carbon of the battery. This piece of silver and the metal model should not touch each other, but should be kept about an inch or two apart. In speaking of these, the model is called the *cathode* and the piece of silver the *anode*. The model is permitted to remain submerged in the solution about twenty-four to thirty-six hours, removing it from time to time, and scrubbing it with a wire scratch brush, as before recommended.

If it be the intention to plate the crown with gold, twenty-four hours will be sufficiently long to keep it in the solution, the remaining time being consumed for receiving the deposit of gold.

### THE GOLD SOLUTION.

To prepare the gold for the gold solution: The gold is first dissolved in aqua regia. Aqua regia is made by combining two parts of hydrochloric acid to one part of nitric. Gold foil scraps are best for the purpose. To dissolve five pennyweights of gold, one ounce of aqua regia will be necessary. The gold is placed in an evaporating dish, and the aqua regia poured on. The solution of the gold may be hastened by placing the evaporating dish in a sand bath, and gently heating this. Continued heat will drive off the acid and leave a residue like thick molasses of a dark red color. At this stage it should be allowed to get cold. This mass is then dissolved in rain water, about three pints, when it becomes of a brownish color. Should a white precipitate form on the bottom of the vessel, this will indicate that there was a trace of silver in the gold, the precipitate being the chloride of silver.

After making this solution from the residue of the aqua regia solution of gold, ammonia is added in small quantities, constantly stirring it with a glass rod. All the gold of this solution will fall to the bottom of the vessel like a brown powder. The liquid is now carefully decanted, and the brown precipitate washed several times with rain water. After this washing the precipitate is dissolved in a strong solution of cyanide of potassium, a half pound of the cyanide being used to a quart of rain water. This solution is then filtered through paper when it is ready for use.

The deposition of a gold crown is similar to a silver one. The metal model being submerged into the gold solution, and connected with the zinc cylinders of the battery, and a piece of fine gold soldered to a piece of thin gold wire, and this twisted to a copper wire and connected to the carbon of the battery. The same amount of time will be necessary to effect the proper thickness of the deposition for a gold crown as for a silver crown.

A silver crown may be moderately well coated with gold by placing the crown in a vessel, containing the gold solution, on the end of a piece of sheet zinc, which has been scraped clean, and allowing this to be submerged in the solution. Heat, gently applied, hastens the coating.

It has been suggested that the strength of these deposit crowns may be materially strengthened if, instead of scrubbing with a scratch brush, as has been recommended, they be well and thoroughly *burnished*. This compresses the deposit, and in a great measure gets rid of the granulations which form in the process of electrical deposit.

[TO BE CONTINUED.]

## METAPHYSICS.

Metaphysicians only preach the gospel of doubt. The whole science of metaphysics consists of the questioning spirit, which analyzes everything without arriving at any definite conclusion about anything. We notice the ingratitude in these philosophers who, in early life, begin by asserting their ignorance and their weakness, and the feebleness of their reason to account for things, when they ask for God's assistance. God in His mercy takes pity on them and answers their prayer, according them the light which they seek and which they could not obtain except through Omniscient aid. But once the reason and light is obtained they turn in their ingratitude and hold themselves up as the true expounders of revelation.

They imagine that the age in which they live is the age of all intelligence, science and wisdom. But don't you think that the Ancient World thought themselves quite as smart and scientific as we think ourselves in our day? Do you not imagine that they thought that science was as much advanced then as we think it is now? and that there is little yet to be learned? Don't you think that there were religious skeptics, atheists, materialists then as we have them now, who founded their faith on the advances made in learning, science and reason? And yet do we not know how the world believed in Ptolemy and his teaching; yet Ptolemy's theories were set at naught by Copernicus. And so is it now with philosophers like Tyndal, Huxley, Darwyn, Spencer and others, who imagine they are men of God-like minds, while their supposed infallible theories may be upset by others yet to come in another age. The infallible word of God *alone* remains unchanged throughout all ages.

Reason may be a very fine thing, but we cannot test everything by it. The ignorant peasant hoots at the idea of antipodes. His reason and his senses both tell him that such things could not be. What! this flat earth round, and men and women walking topsy turvy! No, no, he was not such a fool as to believe such talk.

Reason alone never yet taught us anything, neither science nor religion. No sane person seeks science unscientifically, but ninety-nine out of a hundred seek religion irreligiously. Humility—not pride—is the A B C of all religion, and he or she who asks God otherwise than a child seeks its father will never find Him. What is reason? Don't you see that it varies in individuals, and is modified by all the accidents of birth, education and life? Does not one man's reason tell him there is a God, and another man's reason assure him there is none? Besides, do all love *right* and hate *wrong?* If reason be your only moral code, it goes neither far nor deep. The purer, the nobler part of man—that part which will suffer ungrudgingly for God, for country, for justice, for right, for honor—has not much to do with reason. For reason has no right to condemn us to sacrifice, and, what is more, reason has never done it; so, if you go by reason, you may certainly avoid foolish things; but you will never do great ones, and, what is almost as bad, you will be incapable of recognizing and admiring greatness in others.

## OBSERVATION.

We should all cultivate this useful attribute. When you are introduced to a person remember the name. If your memory be bad, connect the name by some association or circumstance so that you may recall it. In conversing, if the person be a lady, note her complexion, the color of her eyes and hair, her teeth, lips, cheeks, ears, nose, hands. Let nothing escape you. Note if she be natural or affected. If she speak correctly or make errors in grammar or pronunciation, such as "wonst,""twist,""Toosday,"or "between you and I" instead of "once," "twice," "Tuesday," or "between you and me." How she carries herself, how she walks, how she dances. Describe her in your mind. If she have a lively wit, a ready tongue, a showy shape, a sprightly manner. Observe her dress and the way it fits her, and the manner she wears it. Think of its color, material, quality. Her natural and artificial adornments. Whether she be "taking" or "repulsive," reserved or forward, rude or amiable. It is only by the observation of these, and many other points, that one learns to judge character, beauty, amiability, etc. Observation applies not only to persons, but to all things, and the parent should cultivate this spirit by questioning their children when they return from their walk, as to what they saw, and make them describe minutely every little circumstance connected with it.

I recall an anecdote bearing on this, which I will relate to show the difference between two children. A young mother had sent her two little boys to walk. On their return she questioned them as to what they had seen. One of then said, "Oh I didn't see much, only a man driving a cart along the road." The other said "Yes, mamma, I saw that, too; but the cart was filled with bricks, and the man had on an old torn coat and hat, and he had a grey horse pulling his cart; he kept smacking his whip all the time, and a little dog passed and he reached over and cut the poor little dog for nothing. It must have hurt the dog badly, as he limped as he ran away howling. The cruel man only laughed; but I felt glad myself, shortly after, as there happened to be a deep hole in the road and one of the wheels of the cart went into this hole, which upset the cart and nearly made the horse fall, so that the bad man had the trouble to take the horse out of the cart, also a great many of the bricks, so as to make the cart light enough that he could get it out of the hole." Thus we see how observation tells with one and with another; both children having seen the same things.

In our own calling we may observe many things about our patients. Thus, when we see blue eyes and light hair, we may be sure to find white teeth. We see thick lips and flabby cheeks and soft flesh, when we are sure to find thick broad teeth. When we observe hard, dense, yellowish teeth, we also notice stiff hair, rather coarse. When we see the lips firm, the eyes bright, the manner decided, we also observe hard, strong teeth. Thin lips, sharp angular features show us a decided disposition. Other indications about the face, mouth, teeth, lips and membranes indicate certain diseases, while some of those we have enumerated teach us the temperaments of the individuals. It is only by a close attention to points which many overlook that the symptoms of diseases are noted. It would not strike our attention, on visiting a patient in bed, to notice that he would draw his leg up towards his buttock, yet this has been observed to be the invariable action of the commencement of typhoid fever. The pricking of the bed clothes, the restlessness of the patient, the turning from side to side, the incessant gaping, the constant dropping to sleep with incessant hallucinations, are all indications of disease which aid the physician in making his diagnosis, so that observation is one of the most important attributes to inculcate.—THEODORE F. CHUPEIN.

## ALUMINUM CROWNS.

### A SINGULAR INCIDENT.

GEORGE L. TODD, Philadelphia, Pa.

A lady, twenty-five years of age, in good health, presented with an aluminum crown on the left inferior second bicuspid to be repaired. I found the grinding surface worn away by mastication. As it was set with cement, I excavated small portions and filled to the surface with alloy—squeezed dry. In eighteen hours after this operation patient returned and said that during the interval she had "spit out a quantity of sand," as she expressed it, and on examination I found the cement and alloy intact, but the crown had entirely disappeared. As aluminum has no affinity for mercury, I am at a loss to account for this singular behavior.

### EDITORIAL REMARKS.

This is not the first time that singular occurrences have been reported in the setting of aluminum crowns. Only lately Dr. Jos. Halsey, of Swedesboro, N. J., reported before the Pennsylvania Association of Dental Surgeons, a singular occurrence in the setting of one of these crowns. In the case he reported he mentioned that the crown was set with alloy; that as soon as it was set, an exudation sprang out from all parts of the crown resembling "hoar frost" in the minutest spiculæ.

When this was wiped away more of the exudation continued. It finally ceased, when the patient stated that the tooth emitted a "hissing sound" similar to the escape of steam from a steam pipe. Dr. Halsey had set aluminum crowns before with alloy, when no sequences of this nature supervened ; but in the case reported he had used an alloy which had been recommended to him, so that he thought the alloy had something to do with the sequences. The report had not been made public as Dr. Halsey wished to make further trials with the same alloy as he had used to find out if similar results would ensue.

The discussion which ensued on this report established nothing, as none of the members present had had any experience of the kind, many of them having never used aluminum crowns ; but it was conceded that aluminum was a metal invested with such strange affinities that it was only by delicate chemical tests and experiments that any answer could be given to its many strange peculiarities.

We would invite a discussion on this subject, and be pleased to hear from all who have had any experiences such as have been presented by Drs. Todd and Halsey.—Ed.

## TO APPLY THE RUBBER DAM.

In order to get the rubber dam well up on the neck of the tooth, so as to obtain a clear view of the cervical margin of the cavity about to be filled, wrap a piece of dental floss or gilling thread twice around the tooth, and push this well up on the neck of the tooth, then tie. Let this remain for a couple of days, and when the patient returns, the application of the dam can be made with ease to the operator and with little discomfort to the patient, affording a perfect view of the parts to be operated on. Should there be a large space between the teeth, the interdental space *below the ligature* may be filled with cotton steeped in sandarac varnish, or with pink gutta-percha.—T. F. Chupein.

## CLASP PLATES.

When a resort has to be made to clasps, either in gold, silver, or vulcanite work, for the steadying, retention, or greater stability of artificial teeth, I often find it is better to crown with gold the tooth thus used, as the action of the clasp, either by wear or by the deposition of food held next the tooth, causing decay, or from whatever other cause, destroys these teeth so quickly that something of this kind should be done for the benefit of the patient, and to prevent the loss of such teeth made very valuable for the support they give to the denture.—T. F. Chupein.

## HOW TO SEPARATE A FLASK SO AS TO SOFTEN, NOT MELT, THE WAX BASEPLATE WITHIN.

Boil water in a saucepan, then put the flask in this boiling water. The cold flask, with its investment of plaster, will so chill the water that it will cease to boil. Let the flask remain in the water until the water begins to boil again, when you may lift the flask out and pry it open, to find the wax nicely *softened* and not *melted.*

## CHICAGO DENTAL SOCIETY.

I enclose the list of officers of the Chicago Dental Society for 1898-99, elected at the annual meeting, held in the Stewart Building, Tuesday evening, April 5th, 1898:

President, J. E. Hinkins; First Vice-President, D. C. Bacon; Second Vice-President, E. A. Royce; Recording Secretary, Elgin Ma Whinney; Corresponding Secretary, C S. Bigelow; Treasurer, E. D. Swain; Member Board of Directors, J. G. Reid; Board of Censors, A. W. Harlan, W. V. B. Ames, C N. Johnson.

C. S. Bigelow, Corresponding Secretary.

## BIRMINGHAM DENTAL COLLEGE.

The annual commencement exercises of the Birmingham Dental College were held at O'Brien's Opera House, Birmingham, Ala, on Tuesday evening, April 5, 1898.

The annual address was delivered by Judge J. J. Banks; the valedictory by H. T. Hamblen, D.D S., of Texas.

Number of matriculants for the session was thirty-four (34).

The degree of D.D S. was conferred on the following graduates by T. M. Allen, D.D.S., Dean:

J. W. Balkcom, Ala.; C. F Ellis, Texas; W. R. Dillard, Miss.; I. F. Drummond, Ala.; H. T. Hamblen, Texas; J. W. Key, Miss.; H. N. McTyeire, Ala.; R. L. Rogers, Georgia.

## THE NATIONAL DENTAL ASSOCIATION.

The next annual meeting of the National Dental Association will be held in Omaha, commencing on Tuesday, the 30th day of August, 1898.

Attention is called to the fact that all who were members of the American Dental Association and of the Southern Dental Association at the time of the formation of the National Dental Association, are now members of the latter organization.

The Constitution, Article III., Section 5, provides as follows:

"It is hereby specially provided that all persons at present permanent members of the American Dental Association and of the Southern Dental Association, are permanent members of this Association, and entitled to all the privileges of the class to which they belonged without further action, and the treasurer is hereby directed to transcribe their names upon the roll of membership of this Association."

The officers of the National Dental Association will leave nothing undone to make the meeting at Omaha a success, and they hope the attendance and interest in the first active annual meeting of the Association will be commensurate with its importance.

By order of

THOMAS FILLEBROWN, President.

EMMA EAMES CHASE, Corresponding Secretary.

## DENTAL DEPARTMENT OF THE UNIVERSITY OF BUFFALO.

The seventh annual commencement exercises of the above institution was held at Music Hall, on Tuesday evening, April 26, in the city of Buffalo, N. Y., in connection with the departments of medicine and pharmacy, when *sixty-six gentlemen* were graduated as Doctors of Dental Surgery, upon the recommendation of the Faculty; these having complied with all the requirements which entitled them to the degree. Of the number, 45 were from the State of New York; 18 from Ontario, Dominion of Canada; 2 from Pennsylvania, and 1 from Ohio.

## BOOK NOTICES.

INSTRUMENT NOMENCLATURE WITH REFERENCE TO INSTRUMENTATION.

By G. V. Black, M. D., D.D.L., Sc. D., Chicago, Ill.

We have received from the National School of Dental Technics the above pamphlet, which is an effort at the naming of all the instruments employed in the various operations which the dentist is called upon to perform.

It is a classification of these, and is a farther exhibition of the care, industry and earnestness of Dr. Black to reduce everything to system and order.

While other men are playing billiards or cards or riding bicycles, this good man is laboring hard for the benefit of the profession of his choice. What industry! How does he find the time to accomplish all he does?—Ed.

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CATAPHORESIS OR ELECTRICAL MEDICAMENTAL DIFFUSION AS APPLIED IN MEDICINE, SURGERY AND DENTISTRY. By William James Morton, M. D., professor of diseases of the mind and nervous system, etc., etc., etc. New York: American Technical Book Co., 45 Vesey St. 1898.

We have had Cataphoresis with us now for over two years. Indeed, we think that the experiments of Prof. Morton were first given before the First District Society of the State of New York, in February or March, in the year 1896. Since then innumerable appliances have been put on the market for the production of insensibility in the preparation of cavities in painful teeth, the removal of pulps, and the bleaching of discolored teeth by electrical osmosis. Those who have used it report most gratifying results, and the time which was required to produce this insensibility, which was one of its drawbacks, has, by later reports, been greatly lessened.

Cataphoresis is no longer experimental, its results may be counted on as certain, at least so far as manipulation in dentistry is concerned, and to those who may be still unacquainted with its effects, appliance and mode of action, a book, in which all that is known about it, up to this present writing, is a valuable aid to the filling procedure. This is more particularly emphasized when this book is edited by Prof. Morton, whose lucid description and experiments tended so much to bring it to the attention of the profession.

We commend the work to all who would learn about Cataphoresis, as well as to those who know all about it.

It is a handsome volume, well gotten up, well edited, well printed. The type is large, distinct and clear, and this makes the volume delightful to read, while its size is little larger than a manual.—Ed.

THE AMERICAN DENTAL WEEKLY.

We do not know of any dental journal which is published weekly. The *British Journal of Dental Science* appears every two weeks. We know the trouble and care it gives, even to prepare and select matter for our issue, which appears only every *two months*, and can fully appreciate the care of a monthly journal, and still more a weekly.

When the *American Dental Weekly* first appeared, although we knew of the indomitable industry and perseverance of Dr. Catching, we felt it would be short-lived. But the journal continues to come despite our inward prognostications, and moreover is always well-filled with short readable articles. Every Monday morning the postman leaves the journal. Rain or shine, storm or snow, it comes to hand, so we may say with Julia in the Hunchback, by Sheridan Knowles:

"I have seen the snow on a level with the hedge, yet still came Master Walter."

We wish all success to the *Dental Weekly*, and trust it may have a long and prosperous life.—ED.

## SELECTED ARTICLES.

### FORMALDEHYD IN CONNECTION WITH ESSENCE OF GERANIUM IN DENTAL THERAPEUTICS.

In a paper recently read at the Society d'Odontologie, at Paris, M. S. de Marion spoke very interestingly of his experience in the use of formaldehyd in connection with the essence of geranium in the treatment of dental caries.

The choice of a good antiseptic in the treatment of caries of teeth, he says, is yet one of the main prejudices of the dental profession. None of our antiseptics have given entirely satisfactory results, because the physical structure of the teeth prevents the entering of same under ordinary circumstances, the dentin being saturated with saliva and serum. Experiments have proven that creosote, thymol and many others do not combine with water or saliva, but are simply suspended in the same as little globules and cannot therefore act as antiseptics.

A good antiseptic must be soluble in water, it must be diffusible in order to sterilize the liquid contents of the dentinal canaliculi, and lastly, it must have no bad effect on dentin. Formaldehyd is the first antiseptic having each of these properties. Its action is as follows:

All animal matter, in this case the pulp, disintegrates in the presence of air and its nitrogen and carbon form ammonium salts and carbonates respectively. As chemical disintegration goes on, the ammonium salts being very diffusible, saturate the dentin. Formaldehyd brought in contact with the disintegrating pulp has the tendency to form compounds with ammonium and the carbonates.

As a result of it, formaldehyd is chemically and antiseptically naturalized and absorbed. The process of disintegration goes on until the disintegration is complete by addition of more formaldehyd. Then its antiseptic action on the pathogenic microbes begins

The sterilization of caries is a perfect one, but somewhat slow. M. S. de Marion has had excellent results with the addition of the essence of geranium to stop disintegration of putrid matter at the beginning. All ethereal oils, with exception of this essence, cause soreness and pain of the peridental membrane. Essence of geranium put on the tongue has no burning effect, it has a mild and agreeable smell, stops caries instantly, and diminishes the necessity of applying formaldehyd too frequently.

M. de Marion's antiseptic treatment of putrid root-canals is as follows: He opens the pulp chamber as usual and cleans that as well as the canals of all putrid matter. Formaldehyd is then introduced on shreds of cotton and evaporated with a heated silver wire. This treatment is repeated two or three times at same sitting. A temporary dressing is now made of cotton shreds saturated with formaldehyd and geranium, and the cavity is closed air tight, with wax or gutta-percha. Two or three days afterwards the same treatment is repeated. The essence of geranium serves to find out any putrid matter; left in contact with the same, it changes its mild and agreeable smell, and only when the latter is pure a permanent filling can be inserted.

F. A. B.

## USES OF PYROZONE.

I have found pyrozone very useful in the insertion of all kinds of crown and bridge work. We all know that bleeding of the gums gives us great trouble in these operations. I obviate this by applying a 25 per cent. solution of pyrozone to the gums, which acts as a styptic, and in my hands has never resulted unhappily. I also use this remedy in the same manner for the insertion of gold fillings at cervical margins, one or two applications rendering the gum perfectly dry for ten or fifteen minutes, which is ample time for the insertion of an ordinary filling. In the case of abscess with fistulous opening, I use a 3 per cent. solution inserted with a hypodermic syringe, forcing the solution through the fistulous opening, and I find that its use is not as painful as that of proxide of hydrogen. In all cases in which the alveolus has been perforated by the progress of suppuration, and the soft tissues have not yet sloughed, I advise free lancing over the congested parts, and the insertion of a pledget of cotton saturated with a 25 per cent. solution, which should be allowed to remain for a few moments.

For a putrescent pulp, I apply a 5 per cent. solution of pyrozone, which at once disinfects, permitting the removal from the canals of disorganized tissue, without the disagreeable odor which is often so offensive to both patient and operator.

I also use pyrozone for the removal of green stains on teeth, due to organic causes. I use a 3 per cent. solution for this. Apply it with an atomizer, spraying the teeth. I find that this treatment is most efficacious, and also the most pleasant to patient and operator — DR. WETTLANFER, *Dental Practitioner*.

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## SILVER AND THE SILVER SALTS, AND THEIR USE IN DENTISTRY.

Though modern surgery has turned from antisepsis to asepsis, the former is by no means superfluous. Asepsis cannot be obtained in many conditions in which the external circumstances are such that microbic infection cannot be prevented, or where it has already occurred. Moreover, antisepsis often gives us quicker and better results than does asepsis. Especially is this the case in the mouth, the field of our special labors, which is a perfect culture oven of exogenous and endogenous micro-organisms, and where aseptic procedures are entirely inapplicable. We dentists are compelled to rely on antiseptics; and if I propose a new one to you, and recommend it most warmly, it is because of the good results that I have obtained with it in various departments of our specialty.

The ideal antiseptic must possess the following properties: It must be harmless, non-poisonous and non-irritating; it must be fatal to all pathogenic spores and microbes; it must have no deleterious or destructive effect upon the tissues; it must be in a form that renders its application possible in the most difficult localities; and, finally, it should be sufficiently far-reaching in its effects to penetrate the deeper tissues and destroy the germs that may have penetrated to them. None of our previous antiseptics fulfil these conditions. Crede believes that two new ones, the Citrate of Silver and the Lactate of Silver, really do so ; and his conclusions are confirmed by those of Halsted, Beyer and others. His bacteriological and clinical experimentation in the Carola Hospital of Dresden, have given most surprisingly good results.

We dentists are well aware of the fact that the precious metal, in proper form, hinder the growth of the schizomycetes ; that gold fillings are more resistant and more durable than others. I, with Miller, ascribe it in part at least to this fact, though something may be due to the greater care with which fillings of the precious metals are made. Gold plates are better borne by the oral mucous membrane than those made of hard rubber. It seems to be proven that various metals, more especially mercury, silver, gold have antiseptic properties ; whilst zinc, lead, and iron seem to be quite powerless in this regard. The laboratory experiments and clinical researches of Crede and Beyer were so entirely satisfactory that I resolved to try the new antiseptics in dental work. In the sterilization of root sinuses I thought that they would be specially useful. My trials were made upon teeth with freshly killed pulps, as well as upon those in which the pulps had become gangrenous, and include about 100 cases. And I may state at once that my hopes were not disappointed. The results that I have obtained during the last half year have been entirely satisfactory to me, and I can recommend these preparations to my colleagues in the very warmest manner.

I directed all the patients that I treated with the silver salts to return to me at once, as soon as any pain occurred in the teeth that had been treated. Up to the time of this present writing only three have reappeared with periostitis ; and in two out of these three the defects in the molars were distal and difficult to get at.

My method of root treatment is the following : I open the pulp cavity with a suitable trephine, and if the pulp is gangrenous, clean it out as thoroughly as possible with a thin probe. Then I thoroughly and repeatedly inject out the root canal with a freshly prepared and dilute solution (1-2000) of the Lactate of Silver. Then I apply the rubber dam, dry the cavity carefully with cotton, and then thoroughly with the warm air injector ; to the completeness of which procedure I attach the greatest weight. For I believe that even if dead nerve tissue remains behind, further decomposition and the development of the gases of putrefaction cannot so readily occur if all moisture is thoroughly removed, and the mummification of whatever of nervous tissue is left behind is effected. Here the powdered Citrate of Silver is of especial value, since it not only permanently disinfects the decomposition products that remain, but acts as a dessicant also in consequence of its powdered form. As is well known, the difficulty in the sterilization of the root canals depends on the difficulty of thoroughly applying the antiseptic to it. I believe that it is best done by applying the Citrate through an insufflator, to the nozzle of which a rubber tube with a very small orifice is attached; this permits the application to be made to all the sinuosities even of the distal canal.

The pulverization is fairly forcible, and if the lumen of the canal is sufficiently large, I do not doubt that the particles of the drug reach the very ends of the sinuses. If the insufflator does not seem to have effected this, I apply the powdered Citrate to the depths of the canal on a thin probe.

Recently-killed pulps I usually fill at one sitting, simply dusting in the Citrate after opening the cavity with a sterilized bur and filling with tin or gutta-percha in the usual manner. When the root canals are putrid I deem it necessary to make two or three applications and insufflations of the Citrate or the Lactate before proceeding to the permanent filling. Is surprising to see in most cases that after the first introduction of the silver salts the odor of decomposition entirely disappears. I have seen no discoloration of the teeth in the cases that have returned to me; it is true, however, that they were all molar cases. Only the cavities were colored black. Irritation symptoms after the applications were never noticed.

I do not claim that this method of the treatment of roots is the only proper one; for there are almost as many different methods as there are practitioners of dentistry. But with these antiseptics I have formulated a suitable and effective method system of treatment.

In conclusion, let me state that I have used the silver preparations in various other diseases. I have used the grey silver gauze in one case of empyema of the antrum of Highmore, and as a tampon for the hemorrhage following extractions, and also the dilute solutions as gargles in stomatitis; and I have obtained like satisfactory results with them.

The comparatively small number of cases over which my experience extends are too few to base a final judgment on. But the good results certainly enable me to recommend that these silver salts be extensively experimented with and tried by others, and I should be glad to stimulate those of my colleagues who have not yet used these antiseptics to do so.—M. HILLE, in *Monatsschrift fur Zahnheilkunde.*

# DENTAL REMEDIES.

BY DR. C. G. EDWARDS, LOUISVILLE, KY.

Read before the Kentucky State Dental Association, June 16, 1897.

In the classification of remedies it is difficult to arrange them completely, according to their action on the principal functions.

Of the various groups of medicines, I shall only treat of those which we as dentists are the more directly and practically interested in.

### ERGOT.

Ergot, by reflex action, produces active contraction of involuntary muscle fiber; it therefore acts on and contracts the smaller blood vessels, and its administration is indicated in persistent hemorrhage from the gums, and alveolar hemorrhage after extraction.

### CANNABIS IND.

Cannabis Indica is like opium; in large doses, a narcotic poison, its effect is anodyne. As a topical remedy for preventing pain in extraction, I have used it for more than ten years with very gratifying results in many cases; its action, however, is not entirely reliable. It may be applied on pads of cotton to the gum on each side of the tooth for five minutes before operating; in all cases the gum should be dried before making the application.

### EUCAINE.

The public attention which has been attracted by cocaine renders it unnecessary for me to notice it here except by comparison with a new and rival substance called eucaine. While cocaine is an alkaloid of the leaves of coca, eucaine is an artificial or chemical product. There is no chemical difference between the two substances, the only important physiological and therapeutic action being the difference in their toxic effect. I have used eucaine for more than six months, and have extracted more teeth in that time than I had for several years previously. I extracted nine and eleven teeth, respectively, for two patients at one sitting, using two syringes full on each subject, one a lady of highly nervous temperament and light weight. The strength of the solution was five per cent. No unpleasant or toxic effect was noticed, and no complaint was expressed by the patient.

Another advantage which eucaine possesses over cocaine, is the more permanence of the solution, and while cocaine is decomposed by boiling the solution for sterilization, eucaine is not. I have kept a solution of the latter for two months and found it as energetic as when freshly made, though in every instance I boil it before using. In reading very many recent reports from the pen of general and dental surgeons, I find expressed a universal and positive opinion in favor of eucaine, as to its equal efficiency in pain-obtuding power, and its very decided freedom from the toxic effects so frequently occurring with cocaine. The only unpleasant effect so far noticed is swelling or puffing of the tissues, in some cases the swelling extending to the cheek or lip; this is unaccompanied by pain or inflammation, and subsides in twenty-four hours.

### ACONITE.

Aconite is one of the most valuable of known agents in controlling inflammation, as it lessens the force and frequency of the heart pulsation, lowers arterial pressure, reduces the temperature, and stimulates intestinal, cutaneous and urinary secretions. In pericementitis, and in the early stage of alveolar abscess, especially when attended with high temperature, it is a valuable remedy administered internally until its physiological effects are exhibited. Watchful care must be observed in the administration of such a powerful depressant remedy.

Aconite, in conjunction with other remedies, notably iodine, is a well-known topical remedy for pericementitis.

### OPIUM.

Opium, a narcotic poison in large doses, and an anodyne, is unrivalled for relief of pain, and is a powerful abortor of inflammation. There is absolutely no remedy equal to it to relieve pain and induce sleep; by this action it controls nervous and vascular irritability. Opium also has sedative power when locally applied, as well as when internally administered.

### PAPINE.

Quite recently a preparation from opium has been introduced, called papine. It is said to have all the anodyne properties of opium, with the narcotic and convulsive elements eliminated, one fluid ounce being equal to one-eighth grain of morphia.

### AMMONOL.

Many new remedies for the relief of pain have been brought out, notably those derived from coal tar, salol, codeine, phenacetine and ammonol being some of the principal ones, all of which possess sedative and pain-obtuding properties, and probably curative effects. Ammonol in ten grain doses, repeated if necessary in an hour or two, has gained considerable favor for the relief of pain in pericementitis, and alveolar abscess ; curative properties are ascribed to it by some practitioners. If such is the case, it must stimulate and promote the secretions, especially the lymphatic glands.

### POTASS. IODIDE.

There is another group of remedies, classed as alteratives ; agents that produce waste of tissue, destructive metamorphosis. Their function is to modify morbid processes and aid in removal of abnormal deposits by stimulating certain organs and glands to increased activity. These include the salts of potassium, sodium, lithium, ammonium, and mercury. I have used potassium iodide as an alterative in the treatment of pyorrhea alveolaris with very gratifying results, continuing the treatment for weeks after the surgical and local treatment was finished. Potassium salts are diuretic and antacid, and are used especially in the treatment of diseases supposed to be due to insufficient oxidation of the blood-products, or to deficient excretion.

### LITHIUM.

Lithium carbonate and lithium citrate have become popular in the systemic and local treatment of pyorrhea alveolaris, as well as other affections supposed to be the result of deposits of the urates in the affected tissue, which is the case in the gouty diathesis.

### MERCURY.

Mercury has long been employed not only as an alterative, but as a purgative in catarrhal conditions of the intestinal mucous membrane. It is a reliable purgative, and this therapeutic action is often desirable in threatened alveolar abscess. Its action on the liver, with its well-known stimulant action on the lymphatic glands, augmenting their elimination of effete products of inflammation, is a very important factor in controlling the disease, and hastening its termination by resolution.

If dentistry is a specialty of medicine, there can not exist a defined ine dividing the practice. They must merge one into the other, lapping and dovetailing here and there; therefore, we should be fully equipped with a knowledge, not only of the fundamental principles of medicine, but that science which treats of morbid anatomy and physiology, and the application of remedies for relief. There never was a more active period than the present, when the chemist exerted so much energy and intelligence in producing new remedies for the cure of disease and the relief of pain, and in compounding the old and the new into new and convenient forms for administration.

## WALKING ERECT.

Very few persons walk well. Most of us, if we accept the evolution hypotheses, still retain some of the gait of our apish ancestors. The tot-toddlekin as he begins to balance himself on two feet sways from one side to the other, variably like a monkey. The little girl of six summers, with her pretty new dress on, walks as straight and elegantly as ever she will. Her little feet are thrown forward with an elasticity peculiar to that age. The little girl of thirteen begins to be careless, bends her back forward, and goes diving into the schoolroom as if she were going to swim. At sixteen, she steps along with short steps, striking her heels hard on the floor with a don't-care-for-nobody sort of walk. At eighteen, she think more of gait, and tries to recall that of her earlier childhood. The boy of eleven, with his new thick boots, plants his foot like a soldier, and never knows that his boots disturb anybody. Many children are taught at home and at school to walk on their toes. This will do in a sick-room, when one has squeaking shoes, but it is not natural or elegant. Put the heels down lightly at first, and the toes last; this keeps the body erect, instead of bending the body forward as a person must bend who walks on his toes.

Walking should be more thoroughly taught in our gymnastic schools. Dr. Dio Lewis made a specialty of it in his training school in Boston, but his successors have done little to perfect his methods. —*Jour. Hygiene.*

## BREATHE PROPERLY.

Do you know what an "active chest" is? Probably not, answers a writer in the New York *Tribune;* but your chest ought to be active—that is, lifted up—two thirds of the time you are awake. Stand up and take a long breath, as long as you can; now lift your chest; keep your chest up while you go on breathing by movements of the abdomen and the muscles at the side of your waist. A very slight movement is all that is necessary for normal breathing; but now you have let your chest fall! You are so tired you can't hold it up! That shows a very bad, unnatural state of things; the normal human being, whenever he is not relaxed, walks with his chest up, and when he talks with vigor or interest, it is with his chest up; and you can't hold up yours three minutes without fatigue—you can't do it at all, for five! Do you know that the preservation or achievement of a round, slender waist will be your reward if you will strengthen your muscles and learn to keep your chest up? It will certainly, except as you become hopelessly fat, and even then good breathing will do much to preserve some good outlines in your figure. Proper breathing and the habit of keeping the chest up will keep all the internal organs in their proper place and keep them from spreading the waist in any way that is unsightly, and shows not Greek health, but deficient vitality. The first thing is to get so you can hold the chest up. Walk across the floor three times, holding up your chest (just as you do when you try to fasten a tight skirt band), at the same time breathing deeply from the abdomen. After the three times you are exhausted; rest and try it again; to-morrow you can, perhaps, do it four; don't tire yourself, but keep at it till you have strengthened the muscles that hold your chest up, just as you would strengthen the muscles of your arms, with use. Always practice out-of-doors or with your windows up; there are many good breathing exercises and but few can very well be conveyed in print; but the main thing is very simple; breathe with your chest up, and keep on doing so till you do it naturally, all the time that you are not relaxed in rest.

One good exercise that can be taught is to simply stand and take as long a breath as you can, chest well up, and then hold it as long as you can. This exercise used for a few minutes every day is most beneficial, and physicians recommend it for strengthening and expanding the lungs.

Professor Tyndall said that, as a broad, general rule, any air out of doors was better than any air indoors. Breathing exercises are most effective outside the house, and generally they are not conspicuous even on a city sidewalk.—*Scientific American.*

# PRACTICAL PLACE.

## AN ALLAYER OF PAIN, AN ANTISEPTIC AND A LOCAL ANÆSTHETIC.

Dr. S. C. G. Watkins, of Montclair, N. J., said at a meeting of the First District Society of the State of New York: "A few months since I reported before this society my experience in the use of *ammonol* for allaying pain in cases of pulpitis and periostitis. I now wish to make a farther report of my experience of its use in similar cases up to this time. In nearly all such cases I am able to control the pain and comfort the patient. The following will, I think, illustrate its efficiency: A patient complained of soreness in the upper front molar, which had been crowned; she had been kept awake for several nights, and was unable to locate the pain positively, though it was in the tooth which had the gold crown on. I administered fifteen grains of ammonol, and directed her to take ten grains each hour until she had taken three or four doses, unless the pain was relieved sooner. After taking three doses she was entirely relieved, and had a good night's sleep. About four o'clock in the afternoon of the next day the pain returned. I again administered ammonol in the same way, and as a result all pain ceased, and the patient had a good night's sleep. The following day, towards evening, the pain returned. I then examined the case carefully, and discovered a large cavity in the posterior surface of the second bicuspid, with exposed pulp, which faced the gold cap. I applied a temporary dressing for two or three days, using ammonol as a sedative. I then capped the pulp and filled the tooth with oxyposphate without pressure or causing any pain. Next day the toothache followed, and to quiet the pain I again resorted to ammonol, which acted just in the same way that it had previously, so that she lost no sleep, and never suffered more than an hour or two at a time.

In this case I presume the pulp was conjested and dying. I have described it for the purpose of showing how we can control pain, which has baffled us all in the past, with a simple remedy, and I hope others will use it as I have, and be able to report similar good effects.

Another preparation is trippromphenol-bismuth, an antiseptic to take the place of iodoform. It is non irritant and soothing in its action, and has none of the unpleasant odor of iodoform. I have used it in many cases with uniform success, and am quite confident that it will reduce inflammatory conditions in the treatment of pulpless teeth. I used it in conjunction with a liquid antiseptic. I have used trikresol, formalin, oil of cinnamon, and other liquid antiseptics with it by pumping it into the canal to its entire length. I rarely treat a tooth but once.

When the canal is filled with the tribromphenol-bismuth in pasty form, the canal is filled with a rope of cotton, the cavity filled with gutta-percha, and allowed to remain a week or two, or longer, until all inflammation has passed away and the tooth has recovered ; it is then filled permanently at the next sitting without farther treatment. Tribromphenol-bismuth seems to hold its strength ; will not deteriorate or change. I have seen it for several months at a time in a canal, and when removed it seems to be as sweet and pure as when placed in the cavity.

As a local anæsthetic for the extraction of teeth, I have been using of late a new preparation of eucain, called eucain B, which is superior to the ordinary eucain A—it is stronger and less irritating. The toxicity of eucain B is much less than eucain A, and very much less than cocain.

With eucain A I use a seven per cent. solution ; with eucain B not more than a four per cent., and it is said that a one or two per cent. would be sufficient. I would inject a quarter of a syringeful on each side of each tooth, and then wait for a minute or two for anæsthesia to take place before extracting. I have used it quite freely, and have not seen any bad effects from its use.

## SILVER NITRATE IN SUPERFICIAL DECAY.

While this is not a new subject, yet is not old enough for all that is good about it to have been said. We make extracts from some remarks reported in the *Stomatological Gazette*. Dr. Cox says there are many cases where a patient will come, showing a little white streak just above the border line of the gum on the buccal surface of the molars or bicuspids. It is simply superficial. My advice in those cases is not to put on the rubber-dam, but simply a napkin in the mouth to keep the moisture from the teeth, dissolve a little nitrate of silver, rub it on that streak, and play hot air from the syringe on it, and notice the result.

On the same line D. Van Orden suggests, in addition to the above, to paint the gum with tincture of iodine, which will form iodide of silver, and it is quite an important addition for preventing the spreading of nitrate of silver. It can be very easily done. Take little pellets of cotton, roll the cotton and paint the tooth. Have a good supply of these at hand, lay them on a little glass slab, several of them, in case of necessity, so that they can be applied to the tooth.

In treating many cases of third molars, Dr. Whitney makes use of silver nitrate. He says when excavating a third molar, at first you think there is very little decay; then, as you go on, you find this white condition extending on and on, and finally, perhaps, the whole buccal surface has been cut away. Now, in such a case as that, when a tooth is in that condition, I always, before putting any filling in, saturate that with nitrate of silver, unless it is quite near the pulp. In that case I cap the pulp with cement, and then use it about the border, and I have had excellent results in that class of filling.

A new way of applying the silver solution is reported by Dr. Bliss, as follows: In the preparation of nitrate of silver for superficial decay, I dissolve it in alcohol, then place in the solution particles of asbestos, not powdered, but the coarser kind we usually have in the market; afterward drying the particles of asbestos. It can be applied very easily. I also find it better to apply the rubber-dam before applying the nitrate of silver, and wait fifteen or twenty minutes, or perhaps longer.—*American Dental Weekly.*

## MIXING ALLOYS.

Dr. Black says: I do not care how you mix your alloys for filling, provided certain rules are employed. The first rule is this: the more tin you have the less trituration you should give it. The more silver you have the more trituration it demands, for the reason that the alloys with large proportions of tin dissolve in mercury much quicker than alloys with small proportions of tin. You should not manipulate or chop up your alloy in your cavity with your instrument. After you have once squeezed it out you want direct compression of it, hence fillings rubbed in with a burnisher are never so strong as fillings pressed in with a broad serrated point. Furthermore, I would say that I never wash amalgam.

Dr. Black says mercury is in no way responsible for the shrinkage of amalgam.

This is not the general opinion.—ED.

It is thought best to file the alloy up from the ingot as it is wanted.—ED.

## STICKING STOPPERS.

To prevent the annoyance of sticking stoppers in varnish bottles, coat them with glycerine.

### SUCTION CAVITIES.

Suction cavities should be used in but few cases; the plate should fit by adhesion of contact, atmospheric pressure.

### AN INTERESTING CASE.

I would like to report the following peculiar case which occurred in my practice recently. The patient, a young lady of excellent health, presented herself for the treatment of a second left superior bicuspid. Arsenic was applied and the cavity sealed with cement. One week intervened before I saw my patient, at which time the pulp in the crown of the offending tooth was removed. That which remained in the canal showed unmistakable signs of life, and arsenic was again applied on a few fibres of cotton and sealed as before.

Owing to failure on the part of the young lady to keep her appointment, she did not visit my office for two weeks. I examined the tooth and found it somewhat loose in its socket; removed remaining portion of the pulp and treated canal with carbolic acid; saw patient two days later; tooth had grown looser; three days later patient presented with tooth ready to drop out. I removed the tooth with my fingers without the slightest force; the tooth was white and clean; no hemorrhage followed the extraction, and the root was devoid of membrane; a probe introduced in the socket elicited no painful sensation whatever; burred the socket out to the depth of a thirty-second of an inch and treated. Neither the gum adjacent nor the mucous membrane was affected in the least by the arsenic; wound healed readily.—DR. W. E. DIEFENDERFER, in *Dental News*.

### TO CONTROL HEMORRHAGE AT APEX OF ROOT AFTER REMOVAL OF PULP.

Wet a needle of bibulous paper in bichloride of mercury and insert in canal. Will control hemorrhage every time.—J. Y. CRAWFORD, in *Alabama Dental Association*, 1897.

### THE DISCOVERY OF SAL AMMONIAC.

The inhabitants of the deserts of Lybia were, in olden time, inadequately supplied with common salt; their alchemists accordingly manufactured a substitute from camels' dung and named it Sal Ammoniac—"Salt of Ammonia"—in honor of Jupiter Ammon, whom they worshipped.

### ATHLETICS VS. FRESH AIR.

What a man of to day needs most is not athletics in a gymnasium, but plenty of fresh air in his lungs. Instead of a quantity of violent exercise that leaves him weak for several hours afterward, he needs to learn to breathe right, stand right, and sit right. The young man or young woman who starts on a career of training and keeps it up year and year, just at the time when the body has a great deal of its own work to do and wants to do it, may make up his or her mind that beyond a showy and superficial development of muscle and strength, all this training in after life is going to count against them. —*Annals of Hygiene.*

### DENTAL EDUCATORS.

It is not too much to say that our professional reputation must be what our colleges make it. We are the educators of those who are to be the leaders in the future. The next generation of dentists will be what we shall make it. Legislators may pass laws to regulate and restrict dental practice, but the stream can rise no higher than the fountain head, and the practitioner of to-morrow must get his training and derive his professional knowledge from the school of to-day. He must enter the profession by submitting himself to our guidance. The colleges are the fountain head, and the stream will be limpid or foul according to whether we purify or contaminate it —W. C. BARRETT, in *International.*

### HOW ONE MANICURE READS THE NAILS.

People of bilious temperament have red and spotted nails, and so do martial men, delighting in war. Where you see these red nails you may be sure that the person possessing them is easily irritated, though apt to get in a good humor just as easily.

There is a superstition to the effect that white marks on the nails denotes misfortune, but there is nothing in it. These white marks that schoolgirls call beaux merely show that there is too much acid in the system.

People with very pale nails are subject to much bodily infirmity, and if you observe them closely you will find that they always have a grievance.—*Exchange.*

### FOR SENSITIVE DENTINE.

When the sensation in a hyper-sensitive tooth is being complained of as unbearable, the application of one-tenth of a grain of the citrate of cocaine will yield gratifying results.

### How to Take Impression of Mouth with Undercut Teeth.

In taking impressions of mouth, where teeth are undercut so much that a "drag" is likely to result, I find the following method answers perfectly: Syringe and cleanse the undercut tooth, mix some plaster of paris thin, fill up the undercut with it, allow the plaster to harden, and then trim up; smear the plaster with a little vaseline, then take the impression, and afterwards remove the plaster from the undercut, which has remained.—*Ohio Dental Journal.*

### Receptacle for Dirty Burs.

Take any suitable small vessel, cup or box, nearly as deep as the length of an engine bur, fill it nearly full with small shot. When using the engine burs, instead of laying the used or dirty ones on the table, stick them in the shot. It keeps them bright so far as the shank is concerned, and the office attendant knows that all burs in the shot have been used and are to be cleaned.—James G. Palmer, New York.

### Strop for Burnishers, Spatulas, Etc.

Dr. Gordon White, of Nashville, makes a strop for burnishers, spatulas, etc., by gashing a thick piece of sole leather and filling with pumice-stone. With this strop the instruments named can be easily polished.—*American Dental Weekly.*

### Shock.

In case of shock a hypodermic injection of strychnia, containing one twentieth of a grain of the sulphate, should be immediately administered, and repeated every half hour until three doses are given. Then the same quantity is injected every four hours, until the patient has recovered from the shock. If he recover at any time previous, the injections are discontinued. In chloroform narcosis an injection is given immediately prior to the administration of the anæsthetic, and the same rules followed as in the case of shock. There is no choice as to the point at which the injection is made. Any portion of the integument which is convenient will do. It is only necessary to be careful that the injection is properly made and the full dose administered.—*Exchange.*

### Eucalyptus Tooth Paste.

| | | |
|---|---|---|
| Precipitated chalk | 160 | parts. |
| Powdered soap | 45 | “ |
| Wheat starch | 45 | “ |
| Carmine | 1 | “ |
| Oil of peppermint | 2 | “ |
| Oil of geranium | 2 | “ |
| Oil of eucalyptus | 4 | “ |
| Oil of clove | 1 | “ |
| Oil of anise | 1 | “ |

Mix, and mass with equal parts of glycerine and alcohol.—*Pharm. Post.*

### Wishing and Trying.

Wishing does nothing; trying does everything. Your education would never be accomplished by wishing; it is only by trying that we succeed in what we wish to obtain.

### Ignorance.

Ignorance was carried away from the very gates of Heaven, borne through the air and thrust in at a door in the side of a hill, where the steps led down to hell. But give ignorance time and if earnestness be the incentive ignorance will become knowledge.

### The Folly of Private Interpretation.

Laws are made, and it is intended they should be obeyed in the sense they are enacted, not in the sense of the private judgment or interpretation of each individual. Why, then, should it be when God —who is the great law giver—makes a law for our moral guidance, that we should interpret it to suit our ideas?

### Difficult Partial Impressions.

Several weeks ago a lady presented, desiring a partial upper denture. An examination of the oral cavity revealed a V-shaped arch with several sound teeth, posteriorly and anteriorly. Wherever possible I prefer taking plaster impressions in partial cases ; I, therefore, proceeded in the usual manner to get a plaster impression. The teeth were at unfavorable angles, seriously interfering with the work. After several unsuccessful attempts and spending considerable time in trying to patch together broken pieces which were more intricate than a Chinese puzzle, I hit upon the following method : That portion of the plaster which came out intact, viz , the palatal surface, festooning teeth lingually, and partially covering the ridge where teeth were absent, I replaced carefully in the impression-tray, flowing *very* soft plaster where the first impression had been imperfect. I next passed the tray and plaster quickly into the arch, retaining it in position until the new plaster had set in. The cup was then easily removed, the new plaster fractured cleanly and in large pieces, some, however, remaining cemented to the original impression, making it a simple task to reunite the whole. The result was a perfect model of all the teeth, ridge, palatal surface, and condyles, from which I made a well-fitting plate.—HOMER HEBERLING, D.D.S., in *Items of Interest.*

We think it would have been better and more certain if the palatal part of the fractured impression had been replaced in the mouth and fresh plaster put into the impression tray, and then an impression over this taken. It is difficult in passing an impression, in the way suggested, to get the first impression in exactly the same place. What would prevent the new plaster added to that replaced in the tray from running over the former impression when it was carried to the mouth and pressed into place ?—ED.

### REMEDY FOR CORNS.

Dr. Sofshue says linseed oil is a sure remedy for both hard and soft corns. If they are indurated and very painful, the relief it gives in a short time is most grateful. Bind on a soft rag saturated with linseed oil, and continue to dampen it with the oil every night and morning till the corn is removed easily and without pain.—*Science News.*

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# PETER FAUCHARD. 1728.

Peter Fauchard, surgeon-dentist, was born in Brittany about the end of the 17th century, in 1690, and died at Paris on the 22d of March, 1761. He studied his profession under Alexander Potileret, who was surgeon general of the navy, and established himself at Nantes, where he soon obtained a reputation so extensive as to call him to Paris. The practice of dentistry had almost entirely been relinquished to the hands of ignorant and unscrupulous men, and to quacks; but Fauchard possessing superior talents, his acquirements soon brought him in the front rank with men of intelligence and made him celebrated even in the French capital. The observant nature noticed in this man, even in his earliest youth, made him reflect that up to this time, the science of dentistry was transmitted, if one may use the expression, only by oral delivery and by manual exemplification. He entered upon the theory of the diseases of the teeth and the operations necessary to them, and a work *ex professo*, published for the first time at Paris in 1728 under the title: "The Surgeon Dentist, or a Treatise on the Teeth wherein is taught the means of properly caring for them and keeping them in a healthy condition, to embellish them, to supply their loss, and to cure their diseases, as well as the diseases of the gums and the accidents which may unexpectedly attack neighboring parts or teeth, illustrated with 42 engravings on copper plates, in 2 vols., duodecimo," was put forth by him.

This book was reprinted in 1746, and, after the author's death, again in 1786. On its appearance it gained the approbation of anatomists, physicians and surgeons of the greatest intelligence, and holds even to this day the reputation it commanded then. The imperfections which are now seen in it, attest the progress which the art of dentistry has made; but the work will nevertheless be consulted with advantage by all those who would be, like Fauchard, good dentists. Before the publication of this treatise there was no work which explained the manner of filing and shaping the teeth, of filling and cleansing the teeth; the art of constructing artificial teeth was not explained, simple or complicated dentures had not been written about; and the making of obturators covering palates, defective by disease or congenital malformation, was unrecorded. Fauchard described with singular exactness the abscesses which attack the internal parts of the teeth without changing their cortical or outer substance—doubtless alveolar abscess. We may regard him as a most inventive genius, a father of dentistry, a man far ahead of his time. The younger Mr. Sue, in his eulogy of Devaux, said that this clever writer was far from being useless to Fauchard in the editing of his work. From the works of the younger Sue we glean that Sue was quite an authority whose criticism is to be respected, nevertheless the criticism does not depreciate the value of Fauchard's work. Many men are capable of *doing*, few are capable of *expressing*, their ideas. This assertion, even though the help of Devaux were proved, would not in the least diminish the merit of Fauchard's inventive genius or his wise conclusions.

"Fauchard's work," says the medical Biography, "is an incontestable proof of his capacity as well as his deep research and profound knowledge in this branch of surgery which, unfortunately, seems to have been relegated exclusively to a crowd of men who were singularly deficient, actual exotics in the first elements of the healing art, and who followed, or aped each other, in the blindest practice. This work has been regarded even in our day, and with justice, as the best exhibition which we possess on the subject which it treats."

## REMINISCENCES.

### A Personal Contribution to the History of Dentistry.

By Theodore F. Chupein, D. D. S., Philadelphia, Pa.

Sometime about the year 1823, as was related to me by my mother, there arrived in Charleston, S. C., a German dentist by the name of Eswine. Dr. Eswine had letters of introduction to Dr. Simmons, a physician of considerable repute and practice in the city, who referred him to my grandmother for entertainment.

I am not able to say how long Dr. Eswine remained in Charleston, whether his practice prospered, or relate much about him, more than the following: My mother related to me that she was sent to Dr. Eswine to have her teeth put in order, and that his bill was in part paid from the charges made by my grandmother for his entertainment. She also said that he was rather rough, both in his manipulation as well as in his language; for while working for her, not finding her mouth wide enough open for his convenience he told her to open her mouth in not very select language. "Ouvre ta guele" (open your jaw), which he pronounced with the German-French accent.

About the year 1830—the year that I was born—a family arrived in Charleston, who had emigrated from Stockholm, in Sweden. The name of this family was Monefeldt. The family consisted of a widow, with several daughters and a son, whose name was William Stockton Monefeldt. My father, uncle, aunts, as well as my mother, her sister and brother became very intimate with the members of this family, all of whom were about the same age.

The coming to Charleston of this family, I have understood, was brought about by the merest chance. They had had the most terrific weather during their passage and had given over all hope of ever gaining land, but during a lull in the storm, the vessel being in a latitude between Charleston, S. C., and Savannah, Georgia, the captain asked his passengers which port should he make? One of the family finding on board a geography book, turned to the descriptions of South Carolina and Georgia, when the following sentence arrested attention: "Charleston is noted for the hospitality of its inhabitants." The poor family, buffeted about, as they had been by gale after gale for many weeks, longed for a haven of rest and the sentence seemed to respond to the yearnings of their hearts; thus the unanimous vote was "to make for Charleston."

Despite the boisterous weather, young Monefeldt conceived a liking for the sea, and for some years, I have been told, pursued the avocation of the sailor. What influence changed the trend of this fancy I know not, but during my apprenticeship with him in later years I learned that he had taken up the profession of dentistry, having been instructed in the art somewhere at the North; but in what State or with whom, I never learned. He told me the art of swaging plates on zinc dies and lead counter dies had been taught him.

Some time in the year 1832 Dr. Brewster arrived and established himself in Charleston. I was too young to have any personal recollection of him, and only knew of him by what I had heard related by my parents. He had taken rooms on King street—one of the principal streets in the city—not far from Queen street, over the jewelry establishment of Mdme. Boudo.

Here it was that young Benjamin Rodrigues, who had been a student of medicine with Dr. Frost, and who afterwards graduated at the

South Carolina Medical College, got instruction in the art of dentistry, with Dr. Brewster.

There were no dental colleges established at this early date, and the only means of instruction was obtained by private tuition.

Young Rodrigues showing a greater taste for mechanical pursuits than for medicine, offered himself to Dr. Brewster, and obtained from him instructions which fitted him for practice.

In a recent number (the December, 1897, number) of the "Items of Interest," Dr. Rodrigues Ottolingui—a grandson of Dr. Benj. A. Rodrigues—presents the diploma which Dr. Brewster gave to him as a testimony of his proficiency.

Dr. Brewster did not continue for many years practice in Charleston. Whether this was from the fact of not finding business sufficiently active there, or because he had hopes of larger returns elsewhere, we hear of his resigning his practice to Dr. Rodrigues and establishing himself in Paris, France.

Among the patients for whom Dr. Brewster operated was young Middleton Michel. His father, Dr. Wm. Michel, had sent his son to Dr. Brewster to have such of his teeth filled as needed attention. Middleton Michel could not have been more than a boy at the time. In after years he took up the practice of medicine and became quite an eminent physician. He related to me that on the occasion of his visit to Paris, he called on Dr. Brewster but did not introduce himself, merely saying he had called for professional service. Dr. Brewster after seating him in his operating chair proceeded to examine his teeth, going into ecstasies over the work which he saw in his unknown patient's mouth. "By George" said he, "these teeth are well filled. I see but little to be done for you. Whoever you employed has done his work so well as to leave little for me to do. We find a pleasure to praise good work, and although it may not be polite to ask the name of your dentist, I think, when I have no fault to find with his operations, you may divulge it."

At this point Dr. Michel made himself known to Dr. Brewster and recalled to him how, when, and where he had himself filled his teeth in the office he had at the time, in Charleston, over Mdme. Boudo's store. There was a hearty laugh over the recital, with rather a blush over Dr. Brewster's face at his having lavished such praise on his own work.

Dr. Rodrigues and my preceptor, Dr. Monefeldt, were contemporaries. I remember the former well, he having operated for me, as well as enjoying a very extensive practice among the best families of the city and State.

I imagine Dr. Monefeldt must have established himself in Charleston in the early forties—in 1843 or earlier.

His office was located on King street, over a druggist's store kept by a man named Oakley—not many houses removed from the one formerly occupied by Dr. Brewster. He soon established a fine practice and did excellent work. He was able soon to purchase a fine house higher up in the city but on the same street. He used the building for a residence and office, renting the store to a Mr. Moffat as a dry goods establishment. He never married, although a very handsome man. Whether this state was enforced by the circumstance of his wishing to do for his sisters, who, like himself, had been left orphans, I know not; yet I imagine this not to have been the case, since they, while young, taught as a means of livelihood, and all three of his sisters afterward married. He may have assisted them.

In 1847 I was placed by my father with Dr. Monefeldt to have him teach me dentistry. The Baltimore College of Dental Surgery had been etsablished in 1840—but the intimacy existing between Dr. Monefeldt and my father no doubt prompted the latter to prefer the instruction that he could give me individually over what I could obtain in a class at the dental college. Besides those were the first years of the college, and being only seventeen years of age, my parents may not have been disposed to let me out of their sight.

My apprenticeship was passed for two or three years in the laboratory. It was the custom then to pay for instruction, but I know that Dr. Monefeldt never exacted any pay for what he taught me.

I never could fathom his idea of instruction; but for over a year I was kept at carving teeth out of pieces of ivory. He had, as many dentists at this time had also, a number of human teeth kept in bottles in strong brine, which I was told were obtained from corpses. One of these teeth, generally an incisor or cuspid, would be given me as a model, and I was directed to file, cut, scrape or grind the piece of ivory until I should have made as close imitation of my natural model as was I capable. Some of these early attempts, I recall, were "abortions." After this I was directed to fit a block of ivory to a plaster cast. This was accomplished in the same manner as it is accomplished *now* by the Chinese dentists. The model was painted with "India ink" and the block of ivory tried on. Whenever the India ink left a black mark on the ivory, this mark was cut out with gouges, scrapers or burs. This was continued until the block was reduced to a pretty accurate fit, when the upper surface was filed so as to approximate it to a plate. On this plate human teeth were mounted. Such plates were retained either by ligatures tied to teeth adjoining, or by means of clasps riveted to the ivory plates.

I say I could not fathom his idea in keeping me at this, since this style of work had long since become obsolete in this country, gold and silver plates having entirely superseded it; unless it was to give me practice in the use of tools. Nevertheless it had the effect of making me skillful in carving, for about 1849 the South Carolina Institute for the promotion of skill in mechanical arts was established, whereat I deposited a specimen of "carving in ivory." This consisted of an upper and lower set of teeth carved from a solid block of ivory, which was considered so favorably that the judges awarded me a silver medal for it.

Charleston boasted at this time of quite a number of dentists. There was Dr. Rodrigues, Dr. Monefeldt, Dr. D'Alvigny, a Frenchman, who afterwards removed to Atlanta, Georgia, and Dr. Houston. In later years these were increased by Dr. Solomons, who was a pupil and I believe a nephew of Dr. Rodrigues; Dr. J. B. Patrick, who was a pupil and successor of Dr. Houston, and myself a pupil of Dr. Monefeldt.

Before the establishment of these, a Dr. Parmlee visited Charleston annually, and did considerable dentistry in Charleston as well as on the sea islands adjoining, where, I have understood, he made a lucrative practice among the wealthy planters of these islands.

The extraction of teeth was, at one time, the only treatment for these offending organs, and was confined chiefly to medical practitioners. Long after the advent of Dr. Brewster, Dr. William Michel enjoyed much of this practice. His mode of procedure was quite primitive. No operating chair embellished his waiting-room on Queen Street. A sufferer was seated on the wooden settee when the offending molar was examined and waited until the operator was ready. The patient was then directed to stretch himself or herself on his back on the uncarpeted floor; "Primus," the man who drove the doctor's buggy, was the assistant. Primus' duty was to kneel at the head of the patient, placing the palms of each hand on the sides or cheeks of the patient, while the doctor straddling the patient's prone body applied the forceps. When he was ready to dislodge the tooth he cried out "PRESS!!!" and forthwith Primus pressed with both hands until the poor patient felt as if the skull would be crushed in. One pain seemed to counteract the other, for it was generally admitted that Dr. Michel "pulled" teeth with little pain.

About the time I was with Dr. Monefeldt, Dr. J. B. Patrick was pursuing his studies with Dr. Houston, whom he succeeded, Dr. Houston, I believe, returning to the North.

All the tools, files, teeth and other materials were obtained generally through druggists who kept a small stock of these for sale. Impression cups were made by tinmen who made these according to the patterns furnished them, or by the direction of the dentist. I still have one of these tin impression trays which was made for me by a tinman about 1850. A painter named Simmons, who sold putty, glass, paint, whiting, glue, &c., furnished most of the dentists of the city with Abbey's gold foil, but many ordered it in one or two-ounce lots from the North.

Dr. Cleveland, a druggist, kept a stock of teeth, files, excavators, pluggers, &c. The teeth were kept in bulk. Incisors, cuspids, molars, bicuspids all mixed together. There was no discrimination as to shade, side, size or length. All were heaped promiscuously in tin boxes. The selection of a set of teeth for a given case was attended with considerable labor. The size, side, shade and character all had to be selected from this promiscuous lot, which entailed the loss of much time without that certainty as to shade and character, which was afterwards attained, when manufacturers placed the teeth in sets on card wax.

Dr. Cleveland, the druggist, had a brother who was a dentist, and who had his office over his brother's drug store. He was a very skillful plate workman and beautiful specimens of his gold plate work were exhibited at the first fair of the South Carolina Institute, the fair at which I had exhibited my specimens of carving in ivory. It is this Dr. Cleveland who laid claim to the *central* or suction chamber. But although the chamber is known as "the Cleveland chamber" the claim was not allowed by the judges, for the following reasons: Suction chambers had been used on plates in France, and I remember having seen some of these plates where the suction chambers were placed on the ridge of the gum on each side, and this plan had been used by some of the dentists of the city. Dr. J. B. Patrick, however, had a plate to make for one of his patients, but the dread which this patient had of having the roots which remained, extracted, was so great that she vowed she would go without teeth rather than submit to the extraction. Under these circumstances he thought over the matter and wondered why a suction chamber placed in another locality would not do as well as on the ridge? Acting on this idea he made the plate for the lady with a central air chamber, which proved an eminent success.

On inquiry it was proved that Dr. Patrick's use or invention of the central air chamber antedated Dr. Cleveland's. This was known and testified to, as it happened that the plate was made for the wife of one of the judges; but as the witness could not be "called into court" to show Dr. Patrick's work without exposing the lady to the general knowledge of wearing artificial teeth, Dr. Patrick would not push his claim, and this chamber is still known as the "Cleveland chamber."

The Cleveland chamber was constructed differently from other central air chambers used then and since. "The Blind Cell," as it is sometimes called, was made by stamping the plate of one piece, using an elevated pattern of the cell on the die. With the Cleveland chamber, a cap or cover was swaged over this pattern, this part of the plate being cut or filed out. The advantage claimed was that a closer adaptation and a more perfect exclusion of air could be secured with it.

I recall, about 1849, first seeing some porcelain teeth to be used as substitutes. They were monstrosities in size and shape. They had no resemblance whatever to human teeth, being fully as large or larger than a man's thumb nail, which they resembled more than they did human teeth. In color they were of a greenish gray, while the enamel which was flowed over their outer surfaces was largely covered with minute bubbles, apparently of some vitreous substance. They were scarcely one eighth of an inch thick. The backs of these teeth seemed porous and were not covered with enamel as the fronts were. The backs of these teeth were provided with a groove extending from the cervical edge nearly to the cutting edge. This groove was provided with three or four platinum pins, which could be bent over a piece of flat gold wire, which was fitted into the groove, designed to secure these teeth both to the plate as well as to the wire which was fitted into the groove. I never saw any case where these teeth were ever used. Their shape admitted of extensive grinding, in order to reduce them somewhat to a natural size to make an approximation to the size of human teeth. But their color and shape was so abominable, that I never saw any case where they could be employed.

Dr. Blandy, or Blanding, of Columbia, South Carolina, introduced his cheo-plastic method, which was favorably received, but as he left the States shortly after its introduction and left no formula for his metal, and as vulcanite was introduced about the same time, the latter superseded it.

Dr. Rodrigues, I think, was the first to use vulcanite and mount artificial teeth on this base. To him also may be accorded the first "obturator." Although this latter was a simple construction, being only a gold plate swaged over a fissure in the roof of the mouth or hard palate of his patient, it nevertheless was most effective in improving the speech of his patient, who was unable, before this plate was made for him, to enunciate distinctly on account of the air passing from the posterior nares through the mouth or the reverse.

In the matter of continuous gum work Dr. Monefeldt made the first effort to introduce it in Charleston. A Dr. McIlvane, purporting to be the agent of Dr. John Allen, sold the right for the City of Charleston to him, and exhibited specimens of the work The process was explained, and a muffle being procured a furnace for fusing the body and gum enamel was constructed in the laboratory. But whether the furnace was badly constructed, or the process not carried out as it should have been, even the specimen cases which were tried proved utter failures. The material cracked in every possible way, peeled from the platinum plate and was most unsightly. Several cases were made in the effort to improve our knowledge of it, but none of those we experimented with approached in the smallest degree the beautiful specimens which were exhibited. Without more experiments than possibly six or eight cases, Dr. Monefeldt abandoned the work, being better remunerated by his practice at the chair than by experiments in the laboratory, and quietly submitted to the loss of the fee which he had paid for the license.

The workman who preceded me had left the employ of Dr. Monefeldt, so that now all the dental laboratory work devolved on me. While the other workman, and student, remained it was I who ran all the impressions, made the articulating models (made then entirely of plaster of Paris)—brass articulators not being in vogue at the time—moulded the dies and counter dies, selected the teeth, and did much of the work in the laboratory besides the carving of ivory teeth, of which I was heartily sick. Now all the work was done by me, and there was no time for "carving teeth," I doing, yearly, in the laboratory alone, fully five thousand dollars worth of gold-plate work.

In 1852 I established myself in the practice of dentistry, since which time, with the exception of my service in the Confederate Army, I have pursued the calling.

I recall the coming of Dr. John Holt to Charleston. Dr. Holt advertised extensively " painless dentistry," and in a few weeks his office was so besieged that no one could obtain an appointment ; so that I believe he and his assistants were constantly employed. This state of things interfered seriously with me, as well as others who were just starting, or whose practice was not well established. But the old saying, "It is an ill wind which does not blow some good," Dr. Holt had cast his net and made his haul. Arsenic had aided him in establishing his claims to painless dentistry, but when he left Charleston, to practice his rascality on other communities no doubt, then the dentists of the city had their hands full in treating the cases of alveolar abscess which his monstrous use of this irritant subsequently provoked.

During the continuance of the war, being stationed at Adam's Run, a place about thirty miles from Charleston, where we were detailed for garrison duty, General Evans asked the captain of our company if among his men there was a dentist. Captain Walter replying in the affirmative, I was dispatched to the city for my case of instruments. Gold fillings were wanted but I had no gold foil; the depreciation in the currency was such as to forbid its purchase; but Confederate money was plentiful. Corresponding with Messrs. Brown & Hayse, of Atlanta, Georgia, who kept a dental depot, I shortly after this procured of them one ounce of gold foil for which I paid them *fifteen hundred dollars* in Confederate money, some of which I had after the war closed, the demand for gold fillings being so few, as well as my opportunities for practicing dentistry at all, prevented its use, so that the bulk of this ounce of gold foil remained in my hands and was used for "Post Bellum" operations.

The days of dental engines had not yet arrived, and in preparing a cavity of decay the bur and excavator were the only instruments used. I remember seeing a hole, near the root of the right fore finger on the palm surface on Dr. Monefeldt's hand, induced by the constant use of the bur. A hard, leathery skin had formed here as callous as the finger nail, by the constant friction of the handle of the instrument, making a socket as well defined, if not better than the subsequent "bur thimble" invented at about this time.

Although there was no law then to prevent men who had studied dentistry under private preceptorship from practicing the calling, nevertheless the establishment of dental colleges induced many to obtain the diplomas they offered after attending their lectures and submitting to examinations. I believe Dr. W. S. Brown, of Charleston, who had been doing Dr. Monefeldt's artificial work after I left, was the first dentist in the city to work under the authority of a diploma received by him from the Baltimore College of Dental Surgery. A diploma had been conferred on Dr. J. B. Patrick by the New Orleans

Dental College, and in 1872 I received a diploma, after examination, from the Pennsylvania College of Dental Surgery.

I believe it will be cheerfully admitted, that to my efforts was due the establishment of our local dental organization, "The Charleston Dental Society," which, up to the time of my change of residence, induced by the destruction of my office by fire, was kept in successful monthly meetings by my persevering efforts.

The first dental engine which I recall was Green's Pneumatic Engine. Dr. Patrick had purchased one of these at a dental society which he had attended, and on one occasion lent it to me to cut down and polish a contour gold filling which I had inserted. The device consisted of a bellows worked by the foot. From this a rubber tube extended connected with a handpiece. The working of the bellows forced the air through the rubber tube which, acting on the machinery in the handpiece, caused the revolution of a mandril to which the cutting tools were affixed. It was not, however, very popular, as it lacked power, was fatiguing to work, and besides this made such a buzzing noise as to be very disagreeable.

I recall, some thirty years ago, the small book, of not more than one hundred and fifty pages, written and published, I think, by Dr. James W. White, on "Dental Materia Medica." It was the only work of the kind on this subject that was put into the hands of the dentist, and was necessarily crude; yet how I devoured its contents! It was no doubt the pioneer or instigator of Prof. Gorgas' more extensive and elaborate work on "Dental Medicine."

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# THE AMALGAM QUESTION.

By Theodore F. Chupein, D. D. S., Philadelphia, Pa.

We were rather impressed with some of the views advanced by Dr. Charles H. Taft in his paper, "The Amalgam Question," and dentists with "Yankee Wit" read before the American Academy of Dental Science. In some of these we must accord; in others they meet our condemnation.

In the first place we must unequivocally condemn any recourse to trickery in the exercise of our calling Such a resort has no excuse either to cover up incapacity or to carry out our ideas of what should be done. If we consider that amalgam be the proper material to use for a certain case we should use it, and a surreptitious dealing to carry out our opinion should be condemned. "Honesty is the best policy" *always*, and will ever meet the approval of all good men. If patients be more inclined to trust the opinion of their physician than their dentist, the dentist should either reject such patients or resign such cases altogether. We are either professional men or we are not. It is to be presumed that when patients employ a dentist, they do this with a full confidence of the dentist's ability to serve them ; that he, the dentist, is fully competent to tackle the cases offered, as well as to discriminate as to which material is best for the case presented. Or if the dentist take the case, preferring to yield his opinion to the opinion of the physician (who frequently knows nothing about it) which we consider pusillanimous, he should do it with the distinct understanding that he will be in no way responsible for the result.

Nothing esoteric, nothing secret, nothing underhand should be countenanced. No rolling up of sheets of gold foil, no exhibition of gold cylinders, no forming of gold into mats or pellets, while he secretly fills the cavity with amalgam should be sanctioned by any whose good opinion is worth having ; so we must agree with Dr. Taft that "Yankee wit" and all "Snidery" are to be condemned.

In the next place we must admit that there are certain susceptibilities, incomprehensible as they seem, which appear to be born with us and are difficult to overcome. We have heard of persons being affected by eating strawberries, but have never met with the idiosyncrasy, and conclude if it exist at all, that it exists in such an infinitesimal degree that it is not worth mentioning. The other instance brought forward by Dr. Taft, of the man who would be seized with a vertigo, or be affected with a violent headache might be put down as one in a million. We have likewise heard of persons who are so affected by the odor of roses that they are rendered unconscious when the odor is detected. We are more disposed to attribute these peculiarities to the imagination than to the stern reality. People can work themselves up into such beliefs that they imagine themselves sick when they are in perfect health. I remember when I was first married my wife got into one of these nervous imaginary conditions, from the death of our first child, that she was in a pitiable condition. I had a magnifying mirror which I used for shaving. She would put her finger in her mouth to hold down her tongue and with the mirror examine her throat and uvula. She would appeal to me as to the inflammatory condition her throat was in, because of the increased size reflected by the mirror. I could see no inflammation and would tell her she imagined disease where none existed. My mother humored her more than I, so that her consultations were more with her. She would even go to sleep at my mother's house, because she found more sympathy with her mother in law—(which was rather anomalous—mothers in law being generally tabooed). Then she would read attentively the papers advertising "patent medicines," and conclude that every symptom delineated by these nostrum venders was her own. She got worse, contracting a hacking cough, with a creeping chill at the least breath of air. I took her away and consulted a physician in the small village we went to. The physician, a sensible, straight-forward man, examined her carefully and told her he could see no evidence of disease at all, "but," said he, "your stomach is out of order, not from disease, but from something you have been taking." She then told him how she had been taking Cod Liver Oil, for her cough. "You have no cough," said he, "it is the Cod Liver Oil which has produced this hacking cough. Stop it at once, and you will need no further advice from me." The birth of a second child took her attention from herself and she got entirely well. She afterwards admitted to me that she had taken 12 quart bottles of Cod Liver Oil; two and three tablespoonfuls at a dose, and that frequently the stomach would be so nauseated that it would return to the mouth only to be forced back. Thus will persons be influenced by the imagination.

A case is on record of a lady so susceptible to the odor of roses that she would go off in a dead faint at the *odor* of these flowers. Going to a reception she saw a lady with a large bunch of these flowers on her "corsage." Immediately she fainted and had to be taken into an adjoining room where restoratives were administered. When she recovered sufficiently to speak she was asked by those present, among whom was the lady with the offending roses, what was the cause of her fainting? Was it weakness? Was it the heat of the room? "No," she replied, "neither of these. It was that lady (pointing), or rather the roses she wears at her waist. I have a peculiarity about the odor of roses. They make me faint when I smell them." "Then," said the lady, coming forward, "my roses cannot be the culprits, *as they are artificial* and have no odor."

Again we have the record of another case of imagination.

A man was condemned to death, and, some physicians wishing to try the effect of the imagination, requested the authorities to aid them by delivering the culprit over to them. They told this one that he had to die, but that they wished to save him a painful death and would just open the veins of his arms and legs until he would painlessly bleed to death. In an adjoining room tanks were fitted to the walls from which small rubber tubes led, these being filled with tepid water about blood heat. The culprit was blindfolded and led into the room where he was strapped immovably to a cot. The surgeons now pricked the flesh while the tepid water was permitted to trickle on the arms and legs and drop into receptacles below. The utmost silence was maintained. The surgeons speaking in whispers, yet loud enough for the victim to hear, the talk bearing on the condition of the man, and every now and then coming to feel the pulse—and whispering that the man was growing weaker and weaker. The result recorded was that although the man received only four pin sticks, he actually died from the effect of imagination believing that he had bled to death. This may be thought an overdrawn case but it is on record.

In the same way we believe there are persons who can be made to believe that they are affected by certain influences which experiment will entirely refute.

We heard of a case of a poor woman who was sick, almost to death, from the most violent nausea. Two homeopathic physicians were in attendance, and after diagnosing and consulting for some time they determined that her trouble existed solely from her idiosyncrasy to the mercury contained in the rubber plate she was wearing. They told her they could do nothing for her as long as she wore that plate, as it was without doubt she was affected by the mercury in the plate, and if she must have artificial teeth she must have them mounted on a gold plate. In her circumstances a gold plate was out of the question. They promised to do what they could for her, and accordingly on their next visit, told her to go to Dr. ———, that he was a kindly-disposed man and would take her circumstances into consideration and not charge her more than the expenses. When Dr. ——— saw the case he asked her how long these physicians had been attending her. She said about three months, that the trouble she suffered from was caused by the mercury in the plate, and that she never would be better unless she had a gold plate. "Well," said Dr. ———, "you go home, and when your physicians come to see you again tell them I say mercury is not the cause of your trouble, that you will not have to wear a gold plate to ameliorate your condition, and that you can still wear your same rubber plate, and that what they have been fighting over for three months, I will cure in fifteen minutes." Dr. ——— saw that the whole cause of the constant and excessive nausea was due to the plate encroaching on the soft palate, and by simply cutting away the plate until it rested on the hard palate, the case would cure itself, which it did. So much for this diagnosis of mercury.

Dr. Taft depreciates amalgam because amalgam fillings contain mercury. But where one person may be affected by mercury, a thousand may not be, and we very much doubt if the small proportion of mercury which an amalgam filling contains would ever affect any one. Yet we believe the homeopath contends it takes an infinitesimal part of the drug to produce its effect.

Dr. Taft says he has a patient, or knows of a person so easily affected by mercury that if the cork of a bottle containing the bi-chlo. of mercury be left out, and this person enter the room, he would be immediately affected by the infinitesimal fumes, and consequently, for such persons, it would be out of the question to insert an amalgam filling. Such a man is certainly to be commiserated. How does he comb his hair or tie his cravat? He must certainly use a looking-glass; does not the mercury on the back of the glass affect him? It would seem so, since the infinitesimal vaporization from the bottle does this. Is he not a hypochondriac?

We recall a case of a fine operator who refused to use gold at the earnest solicitation of his patient. The patient was persistent, doubtless egged to the operation by one of the "gold fiends" who consider that gold is the sole prophylactic for filling teeth. Time and time again he came to the charge, and time and time again the dentist refused, until the patient, either of his own opinion or the insinuations of the "gold fiend," believed his dentist *incapable* of this style work. The patient had lost his back teeth, and did all his chewing on the sixteen oral teeth which remained to him, namely, from the first bicuspids from one side to the other in each jaw. These teeth had been considerably worn, and the "gold fiend" proposed to restore them with contour gold fillings, which he did for the patient, when this one found that *his* dentist would *not* do it. After paying a very heavy fee, the patient returned to his dentist, eighteen months later, with his beautiful contour fillings flattened out like lead bullets subjected to the blows of a hammer. Amalgam inserted under similar circumstances would have served a better purpose. Under these circumstances I wish to stand up for amalgam, as I know that it holds a valuable place.

Because an infinitesimal number of persons may be affected by mercury, which we are inclined to doubt, and rather often disposed to attribute to the imagination, are we not to use it? Because a few may be affected by eating strawberries, are strawberries not to be eaten?

The position is untenable.

If Dr. Taft wishes to condemn the use of amalgam when the patient asks for gold and inserts amalgam "on the sly," then I am with him; but if he wishes to taboo amalgam I am against him. *Unguibus et rostero.*

## REPORT OF THE NEW JERSEY STATE DENTAL SOCIETY.

The twenty-eighth annual session of the New Jersey State Dental Society convened at Asbury Park, at 10 o'clock, July 20th, 1898.

After the usual preliminaries, the President, Dr. J. L. Crater, of Orange, read his annual address. He gave a brief review of professional progress, noting especially matters of local interest, and spoke at some length of the new dental law, and explained the object of the changes made. While it was not just as they would like it to be, he thought, in the light of passed experience, it would prove an improvement over that which it superseded. The address was short, practical, and to the point.

The remaining time of the session was devoted to business.

At the afternoon session, Dr. Allison R. Lawshe, of Trenton, read a paper describing a new sectional block for vulcanite, or other moulded or cast bases. The section exhibited was simply a gum section block of three front teeth. The teeth belonging to it had been ground away and plain countersunk teeth fused on in their place; the change was very neatly done. It was, of course, merely an extemporized model illustrating the essayist's idea. While it may give a little more natural form to the palatal surfaces, it will not, I am impressed, be nearly as strong, or as generally useful, as the usual form of front blocks. It is merely a modification of a thousand and one suggestions to the same purpose that have been proposed from time to time.

Dr. Wm. J. Wallace, of Glen Falls, N. Y., followed with a paper upon "Practical Experience with a few Homeopathic Remedies in Dental Practice." So far as your reporter could understand, he simply used a few of these remedies to reduce inflammatory conditions, or to combat systemic conditions inimical to dental treatment, or to relieve pain.

Dr. Frank G. Gregory, of Newark, N. J., read a paper upon "An Effective Method of Treating Chronic Alveolar Abscess, and Molars having Exposed Pulps Difficult to Extirpate."

His method was, in short, to extract the abscessed teeth, reduce the length of the root, and, after promptly treating the tooth and socket, replant. The molar teeth he treated in much the same way.

At the evening session a paper was read, written by Dr. I. P. Wilson, of Burlington, Iowa, entitled "A Study of the Physiological and Pathological Conditions of the Apical Portion of the Cementum." The discussion turned largely upon the safety of leaving arsenic in contact with pulp tissue more than a few days, and also its ultimate effect upon the tooth tissue and surrounding parts, when permitted to remain a long time within the pulp canal. I noted no new points brought out by the rather long and animated discussion. The speakers, for the most part, merely related their own opinions and experiences, and saw little to commend in those of others.

This was followed by a paper by Dr. J. A. Wass, of Hammonton, N. J., upon "My Experience with Pulp Mummification." This was a real practical paper. The writer had for two years followed the method of pulp mummification suggested in the *Dental Cosmos*, Nov. 1895, page 922, and referred to some sixty cases, embracing all kinds and conditions of teeth, which he had treated by that method, most of which he had been able to keep track of, and they had, without exception, remained comfortable, and, so far as he could see, promised to be perfectly successful. He exhibited quite a collection of extracted teeth with roots so formed that they would bother the most expert operator to perfectly cleanse and fill to the apex their pulp canals, some extremely long with curves at critical points, others with peculiar curves, others again with a multitude of small roots whose canals emerged from the central cavity in most unlooked-for positions and directions. They were a suggestive object lesson.

Of course, the method was pronounced unscientific, and dire disaster prophesied, and many reasons given why it could not, and should not, prove successful; and why it was not good practice. The essayist, however, very well held up his end of the argument. Having in so many cases succeeded in making the teeth perfectly comfortable, finding that they remained so, and finding the practice much more satisfactory to him than his previous efforts in extirpation and filling, he was disposed to continue the practice of mummification until he found better reasons for changing than those so far suggested.

The next morning, July 21, two papers were read, the first by Dr. W. G. Chase, of Philadelphia, Pa., entitled "Alveolar Abscess and Caries of the Maxilla." The second by Henry H. Merrell, Ph. D., M. D., of Chicago, entitled, "A Plea for the More Scientific and Careful

Study of Materia Medica as a Branch of Dental Education." The discussion of both these papers turned upon the right and the advisability of dentists assuming to prescribe for systemic conditions more or less associated with dental lesions, or to assist dental treatment. The legal rights, the professional rights, and the politic rights of encroaching upon general medical practice were thoroughly discussed While the two extremes of the question had advocates who vigorously stated and defended their views. those who thought it was a matter calling for careful and discreet judgment presented decidedly the best and strongest arguments.

The afternoon was devoted to clinics. The following were noticed by your reporter. It is quite probable he may have missed others of equal merit. Dr. A. Irwin, of Camden, N. J., presented a case in Orthodontia, a mouth particularly crowded, which he had markedly improved with a still farther improvement by extracting and expanding, using for the latter purpose a bar attached to the back teeth and extending around the upper front teeth, capping the molars to facilitate the upper front teeth moving outward to assume their proper place in relation to the lower incisors.

Dr. C. de Trey demonstrated the workings of solila gold.

Dr. Joseph Head illustrated a method of replacing the molars of the lower jaw when required on one side only. He constructs a plate resting upon the gum under the teeth to be supplied and extending two or three teeth farther front. To the inside of these teeth, one, two or three, as may be judged best, he makes a clasp approaching very nearly the form of a half cap, fitting the lingual surface, and to the buccal surface a clasp embracing one or two teeth near the gum line. This makes a device that remains firm, and comfortably resists the pressure of mastication. The doctor said that he had made many pieces constructed in this way, and that they had uniformly given satisfaction.

Dr. W. H. Pruden, Paterson, N. J., exhibited the use of a gutta-percha washer between the root and a porcelain crown, the object of this washer being to more thoroughly protect the cement from the solvent action of the saliva.

Dr. H. C. Register, of Philadelphia, exhibited and explained his method of using a ribbon matrix, of using bibulous paper in inserting and condensing gold, showing its use with both foil and crystal gold. He also exhibited a method of sterilizing teeth in the mouth by means of formaldehyde gas, hoping by periodically thus treating teeth in mouths, where decay is rampant, to lessen its ravages. He covers as many of the teeth as may be convenient with the dam, pressing it well down towards the gum so as to include all portions of the teeth liable to caries. He then gathers the free portion of the dam together so as to form a kind of bag enclosing the teeth. Into this, by means of suitable appliances, he passes the gas, providing means of access and egress so the teeth are surrounded by an atmosphere that destroys all forms of germ life. This gas is particularly penetrating and a reliable germicide. He hopes by thus treating all the teeth in the mouth at suitable intervals, to prevent the formation of those colonies of destructive germs so ably demonstrated by Dr. Williams to be the initial cause of dental caries.

Dr. F. L. Fosheim, of New York, demonstrated a method of fastening loose lower front teeth. He first made along the cutting edges of the teeth a shallow groove, then at a convenient point drilled into each tooth, in line with the axis of the tooth, a small hole about an eighth of an inch deep. He next fitted to the cutting edge of each tooth a platinum cap, burnishing it well into contact at all points, then soldered to this cap a pin passing into the hole. This cap covered the cutting edge only, and is not intended to extend farther over the tooth. When all are fitted, they are placed into position and by suitable means held together, removed, invested, and firmly soldered so as to form a strong continuous cap or band fitting accurately the cutting edges of the teeth, with a pin passing into the hole in each. This is then cemented in place.

At the evening session, Dr. William H. Trueman, of Philadelphia, read a paper entitled "The Evolution of Dental Materia Medica," in which he traced the use of remedies for the treatment of disorders of the teeth from a remote period. He read extracts from a medical work written in 1514, giving the crude ideas then held regarding the teeth and their diseases, and some of the peculiar remedies in vogue. Of these, he said, camphor, acetic acid, alum, and alcohol, and a few aromatics, are about all that have continued in use. He then read from a work published in 1679, upon the teeth, by a French apothecary, showing a better knowledge of the disorders of the teeth, and a line of treatment more in accord with present practice. This writer was well acquainted with nitrate of silver, sulphuric acid, oil of cinnamon, and oil of cloves, and used them for much the same conditions and in much the same way that we do. He then gave a resume of a portion of chapter V, vol. I, of Fauchard's work, giving his classification of diseases of the teeth, showing evidence of that writer's better acquaintance with the character, structure, and surroundings of the teeth. With this came, as a matter of course, a more intelligent use of remedies. He thus demonstrated that in the interval between 1514 and the time Fauchard wrote, 1728, dental materia medica had become a science.

At the morning session, July 22, Dr. H. C. Register, of Philadelphia, read a paper outlining a proposed method looking to the prevention of caries by some such means as suggested by his clinic.

The closing hours of the session were occupied by society business.

The meeting, as a whole, may be considered a successful one. We missed several who have been for years constant attendants. Some have passed away, and others, closing long and well spent lives, are waiting their call. We were particularly pleased to note the youthfulness of a majority of the essayists, and a more than usual proportion of youthful faces among the audience. The list of members, as given in the neatly gotten-up programme, is about 104, and at this meeting about half a dozen more were elected. We consider this an excellent showing.—W. H. T.

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[THIRTY-FOURTH PAPER.]

## LEADING QUESTIONS AND ANSWERS FOR DENTAL STUDENTS.

By Theodore F. Chupein, D. D. S., Philadelphia, Pa.

Q. Should the patient return complaining of severe pain after the application of arsenic, how would you act?

A. If the tooth were a young one, or one highly organized, I would use all means to suppress the inflammation which was doubtlessly caused by the irritating nature of the arsenic.

Q. What would be those means?

A. I would cleanse out the cavity; free it of all trace of arsenic, and ease the pain by the application of chloroform, camphor, hydrate of chloral, hydrochlorate of cocaine, carbolic acid, oil of cloves, any of these, or other agents, until I could obtain quiet. If the patient were in a highly nervous state from suffering, I would prescribe one, two or three antikamnia five-grain tablets, administered every hour, and a five-grain Dover Powder tablet on retiring for the night.

Q. In teeth of the young, or in very vascular teeth, is not the application of arsenic apt to produce these results?

A. In such teeth these results may be looked for.

Q. Why?

A. Because the arsenic is rapidly absorbed and a very small quantity of the agent is required in these cases.

Q. Have any suggestions been made to prevent the pain caused by rapid absorption?

A. It has been suggested that by combining the arsenic with powdered charcoal and then forming it into a paste the rapid absorption may be controlled.

Q. What has to be considered in making an application of arsenic to destroy a pulp?

A. The density of the tooth and the age of the patient.

Q. How much of the pulp should be devitalized?

A. At least two-thirds. It is difficult to so make an application that will effect this exactly; but by a careful diagnosis of the character of the patient, the age, nature and density of the tooth, and the quantity of the agent used, an approximation may be arrived at.

Q. Is arsenic soluble in carbolic acid?

A. It does not seem to be, for after considerable trituration of the two the arsenic sinks leaving the carbolic acid above.

Q. How is arsenic generally used now?

A. It is formed into a paste with morphia, iodoform, hydrochlorate of cocaine, etc., by moistening one or more of these agents with the oil of cloves or carbolic acid.

Q. Is the addition of morphia to the arsenic attended with any beneficial results?

A. It was at one time thought that it obtained an analgesic effect, and reduced the pain of the arsenic; but it is now regarded useless in procuring this benefit. Nevertheless it has been proved in very many cases that the application of morphia quiets toothache, and is one of the best applications to quiet inflammation and as a forerunner to the application of arsenic.

Q. When the cavity exists on the proximate side of the tooth, what should be the procedure before the application of the devitalizing agent?

A. The rubber dam should be applied so as to isolate the tooth, and thus prevent any danger of escape of any of the arsenic on the gum at the interdental space, whereby a sloughing would ensue.

Q Suppose the tooth to be so decayed and the cavity so shallow as to afford no lodgment for the retention of the arsenic next the exposed pulp, how is this to be retained?

A. By means of ligatures wrapped around the tooth tying in the application.

Q. What other means have been resorted to?

A. A small quantity of arsenic is applied, retaining this with a little oxyphosphate cement. This application is intended more to deaden a portion of the dentine so that this may be cut into a cavity for the better retention of the arsenic than the broken walls or shallow nature of the case at first permitted.

Q How long should the arsenic be permitted to remain in contact with the exposed pulp?

A. Twenty-four hours have been deemed long enough, although a longer time is frequently required.

Q. Can the pulp then be removed painlessly?

A. Sometimes it can, but often it will be attended with considerable pain.

Q. Why should it give pain if it be dead?

A. There is a portion of the pulp still alive at the end of the root, and it is when the dead portion is forced against the live portion by the insinuation of the nerve broach, or when the live portion is severed from the dead portion by the barbs of the nerve broach entangling themselves in the dead portion, which cause the pain.

Q. Is it best to remove the dead nerve at the time of the removal of the devitalizing agent?

A. It is thought by some operators that it is better to wait for a time, until there is a partial sloughing of the pulp before the removal is attempted; that by thus waiting less pain is inflicted.

Q. How is the pulp removed?

A. A barbed broach is insinuated into the root as far as possible when it is rotated, thus severing the live part from the dead.

Q. Are all these nerve broaches made alike?

A. No. Some are barbed along the shank, others have but a single hook or barb on the end, while still others are formed like a spiral or corkscrew.

Q. Which of these styles remove the nerve best?

A. Each has its advantages. It is difficult to decide as to which is best, as with all three styles we have failed at times to remove the nerve.

Q. When the nerve cannot be removed with broaches what has been recommended?

A. To knock it out.

Q. How is this done?

A. An orange-wood twig is whittled down to a size approximating the size of the nerve to be removed. The point of this is entered into the root canal. A sudden blow on the protruding end of the twig drives the stick up to the foramen and thus destroys the nerve, as the nerve is generally found adhering to the stick when this is withdrawn.

Q. Is this not a severe operation?

A. The quickness with which it is accomplished renders it not nearly as painful as the gradual insinuation of the nerve broach. Patients for whom it is done complain less of the knocking out of the pulp than of its removal with broaches.

Q. Suppose the stick should break in the canal, what then?

A. It may readily be drilled out.

Q. Is this operation practicable in all teeth?

A. It is not; but it may be performed on any of the six front upper teeth, in one of the roots of the first upper bicuspids, and the palatal root of the upper first and second molars, also on the lower cuspids and the lower first and second bicuspids.

Q. When the nerve has been removed, should the roots be filled at once?

A. Considerable difference of opinion exists on this subject. It is thought to be safest to place a temporary stopping in the roots steeped in oil of cloves, or eucalyptus oil, and fill the crown with red gutta-percha, and thus let it rest for a time

Q. What objection is raised to this plan?

A. The advocates of delay in filling contend that there is a collection of lymph in the canal which might invite putrefactive action, which the antiseptics used would check; while those favoring immediate filling contend that the insertion of the filling would check this collection of lymph and would arrest it altogether. Dr. Litch recommends that before the filling is inserted a heated broach should be freely passed into each root so as to dessicate the contents of the canals, should any be present.

Q. Does the application of arsenic ever fail to devitalize a pulp?

A. Repeated applications of arsenic have been made to an exposed pulp, and have even been pricked into the organ, yet has failed to act on it.

Q. Should the pulp be very difficult or painful of removal, and the operator aversed to the knocking out process, is it best to wait for entire decomposition before attempting its removal?

A. Such procedure is considered very reprehensible and should be condemned. There are means now of removing any pulp painlessly, or with comparatively little pain.

Q. When the pulp dies without the application of arsenic to destroy it, what becomes of it ?

A. The pulp becomes disorganized and putrescent.

Q. May not this condition occur *without* as well as *with* exposure ?

A. It may.

Q. How would you define such a case when the pulp died without exposure ?

A. Death from extrinsic causes.

Q. Please to give an example of death from extrinsic causes.

A. As the word implies, the death was caused from *outward causes*—the word extrinsic meaning outward. A blow, a fall whereby the tooth was brought in violent contact, resulting in the death of the pulp.

Q. Are these the only cases of death from extrinsic causes ?

A. The pulp may be killed from violence used by regulating appliances, or from the sudden change of temperature induced by very hot or very cold food carried through metallic fillings in the vascular teeth of young persons.

Q. Is the death produced by the action of regulating appliances the same as the death produced from thermal changes ?

A. The death produced by the action of regulating appliances is generally attributable to strangulation at the apical feramen, while the death from thermal changes is more attributable to repeated shocks.

Q. When the pulp of a tooth is thus killed, is it generally the cause of great pain ?

A. It is not generally the cause of great pain. Indeed, pulps may be thus killed and the tooth remain perfectly comfortable and quiet for years.

Q. Do they always remain quiet ?

A. They do not ; but are liable to result in the most violent pain without any accountable cause.

Q. Should one of these teeth be a front tooth, which has resulted in discoloration, would it be proper to attempt the restoration of the color of the tooth by the treatment for this ?

A. This would be a question ; for in opening into the pulp chamber in order to remove the septic matter, preliminary to the bleaching of the tooth, the risk of causing violent pericementitis, and the intense suffering it entails is scarcely warrantable, and should not be attempted without informing the patient what might be the result of such procedure.

Q. What might happen besides the pain induced from meddling with these cases?

A. The condition of the system must be considered, for if this be in a depraved state, besides pericementitis and alveolar abscess, necrosis could result.

Q. What, then, is a good rule to guide us in these cases?

A. To leave well alone. To use our efforts to relieve pain and not meddle with cases that are quiet, and would result in violent pain, possibly a worse condition by such interference.

Q. Are all teeth with dead pulps subject to these conditions?

A. They are; but teeth which have their pulps entirely enclosed, either by being free from decay or having only small cavities, which have been filled, are more liable to assume these severe conditions.

Q. When such teeth take on these conditions from whatever cause, what is the treatment?

A. The pulp chamber must be opened by drilling through the enamel and dentine, or through the filling, should it have been filled, in order to give vent to the septic matter within this chamber.

Q. Suppose the tooth to be an upper first or second molar, with a filling on its disto-masticating surface, would you approach the pulp chamber through the filling?

A. If the filling were in perfect condition, and did not involve a very large portion of the tooth I would not disturb this, but make the opening through the masticating surface. If, however, the filling were in a poor condition and was of such a size that a new opening would materially affect the strength of the tooth, I would then approach the pulp chamber by removing the filling. If the case were any of the oral teeth I would approach the pulp chamber through the palatal surfaces of these teeth, drilling in the direction of the long axis of the tooth.

Q. How will you determine when you have entered the pulp chamber?

A. The drill, finding no obstruction when it reaches this point, will suddenly sink into the pulp chamber.

Q. What will ensue then?

A. There will sometimes be the exudation of pus, or a powerful odor of putrescence ensuing.

Q. What is then done?

A. The pus is permitted to flow until it shows signs of ceasing, when it is wiped out of the cavity by means of a probe wrapped with cotton floss, and afterwards with some antiseptic mixture, such as carbolic acid, oil of cloves or eucalyptus. In the case of excessive putrescence there is nothing which controls this and neutralizes the odor more promptly than electrozone or meditrina.

Q. What is next to be done?

A. It is best to do nothing more at this sitting, but simply to seal the cavity vent *lightly* so as to prevent the ingress of food.

Q. What is done next, after relief has been given by drilling into the pulp chamber as above indicated?

A. The putrescent pulp is removed and the canals treated in the manner usual for such cases.

Q. What is this treatment?

A. The odor of putrescence must be eliminated and then the case treated with carbolic acid, salicylic acid, boracic acid and such agents as will prevent further decomposition.

Q. Who has taken one of the most intelligent views of such cases?

A. We are indebted to Prof. Litch, of Philadelphia, for a very clear expression of such cases.

Q. What does he say?

A. "A careful discrimination must be made between the powers, respectively, of such antiseptics as carbolic acid, creosote, oil of cloves, oil of thyme, oil of cajiput, etc., and such other antiseptics as chlorine, bromine and iodine, which, in addition to their antizymotic power, are true chemical antagonists of those sulphuretted-hydrogen compounds of which putrefactive gases are constituted, such gases being immediately decomposed by them, their hydrogen elements going either to the chlorine, bromine, or iodine, to form, respectively, hydrochloric, hydrobromic, or hydroiodic acids, the sulphur being in each case precipitated.

"This can be readily demonstrated by acting upon a small portion of ferrous sulphide with dilute sulphuric acid, and passing the sulphuretted-hydrogen gas, which will result from the reaction, through tincture of iodine. A milky precipitate of sulphur will at once appear, and at the same time the characteristic color of the iodine will disappear in consequence of the conversion of the iodine into hydroiodic acid, a heavy, colorless gas, which remains in solution in the water present in the alcohol of which the tincture is made.

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"If the sulphuretted hydrogen is passed through the strongest possible solution of carbolic acid, no such precipitation of sulphur occurs; no change either in the appearance or chemical constitution of the the carbolic acid is manifest. * * * * No matter how thoroughly the odor of putrefaction in a room or in a tooth may be masked or disguised by the characteristic odor of carbolic acid, creosote, oil of cloves, or, indeed, any antiseptic oil, the gases are none the less present, although their odor is neutralized; the disinfection is apparently not real. The further formation of putrefactive gases may be prevented, but the decomposition of those already formed must be accomplished by those chemical agents bromine, chlorine or iodine."

See *Dental Cosmos* for February, 1882.

[TO BE CONTINUED.]

## BOOK NOTICES.

ORTHODONTIA, OR MALPOSITION OF THE HUMAN TEETH; ITS PREVENTION AND REMEDY. By S. H. Guilford, A. M., D. D. S., Ph. D., Professor of Operative and Prosthetic Dentistry and Dean of the Philadelphia Dental College; Author of "Nitrous Oxide," etc. Approved by the National Association of Dental Faculties as a text-book for use in the schools of its representation. Third edition, revised and enlarged. Philadelphia: Press of T. C. Davis & Sons, 529 Commerce street.

The book of Dr. Guilford is worth its weight in gold to the dental student and practitioner who desire to inform themselves on the subject of Orthodontia, as well as to refresh their ideas as to meeting the difficulties, or selecting the appliances by which these may be combatted, or rendered subservient to what is desired to accomplish.

Besides the attractiveness in its general make up, namely in typography, etc., the language is so clear, the descriptions so lucid, the points so well chosen, and the cases cited of such every-day occurrence, that the work embodies the whole subject.

Many of the cuts are comparatively new, clear, well executed and aid to the greatest extent in the comprehension of cases to which they refer.

The chapters on the "construction of regulating appliances, with the necessary tools, etc.," as well as their gilding or electrical embellishment, are far from being the least merit of the work. He indeed would be "dumb" or "clumsy" who could not, if he possessed only mediocre manual dexterity, manufacture for himself an appliance suitable to the case he would be called on to treat.

We honestly commend the work to all dentists interested in the subject of "Orthodontia."—Ed.

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A Compend of Dental Pathology and Dental Medicine—containing the most noteworthy points upon the subjects of interest to the dental student and a section on emergencies, by Geo. W. Warren, A. M., D. D. S., Chief of the clinical staff, Pennsylvania College of Dental Surgery, Philadelphia; Editor Richardson's "Mechanical Dentistry," etc. Third edition illustrated. Philadelphia: P. Blakiston, Son & Co., No. 1012 Walnut street, 1898.

We notice in this, the third, edition of this work a marked improvement on its former editions. While the subjects treated are necessarily but brief allusions, the explanations are terse and give the gist of what may be more extensively eliminated in works devoted to each particular subject.

The section on Dental Medicine takes in review all those materials which come into almost daily use, explaining their action, effect, components, properties, etc.

In a small compass the book contains much which the dental student should know thoroughly, which is readily accomplished because all is divested of extraneous matter.

The section on emergencies may be very well to incorporate with the work, yet the subject of "artificial breathing" is one only learned by actual demonstration and could only be illustrated by means of the recent invention—"the Cinematograph."

We rather approve of these "Compendia," because, if the student be really in earnest and desirous of learning, they are the "signboards" directing him to further, deeper, and more thorough knowledge —Ed.

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A Treatise on Plateless Dentures—Dr. C. A. Samsioe, of Stockholm, Sweden, writes us: I take the liberty of sending you by this post (May 25, 1898), a copy of my little work: "A Treatise on Plateless Dentures," etc., etc., etc.

As the work has not come to hand up to the time of our going to press, no review can be made of it.—Ed.

## TIMID CHILDREN.

M. LUKENS LONG, D. D. S., Philadelphia, Pa.

The impression made upon the mind of a child during its first visit to the office of a dentist, will probably have an influence for good or for evil through life, showing the necessity of our making it one to be remembered with pleasure.

In the first place, you should try and gain the confidence of the child. Many will not even allow you to look in their mouths, and you must use some stratagem to accomplish your purpose. Show them a bottle of tooth powder, let them smell it, and ask if they are not pleased with it. Pour some in a small dish with a few drops of water. You will soon find your patient watching your every movement. Have two pieces of orange wood sharpened like a lead pencil prepared beforehand and in convenient reach in your cabinet, one of them short and fitted to your paste polisher. Dipping the long piece in the tooth powder, say to the patient I will now proceed to clean your teeth and you will find the operation so pleasant that you will consider it a great favor to be allowed by your parents to visit the dentist. Give them a handmirror and say watch me while I do the work. Commence on a central incisor very gently at first, but gradually increasing the pressure until you can remove any accumulations on its surface. With a pellet of cotton dipped in water, wash the tooth clean. Probably at the sight of the dressing pliers they will exclaim "now I know you are going to pull my tooth." You will say, how could I pull a tooth with this small instrument. I only show you how neatly we do this, or would you prefer my getting a washrag to wipe it off?

I will now place this mouth mirror back of your teeth and when you look in your glass you can almost see through them. For an examination of the teeth, sharpen the orange wood stick, dip it on the tooth powder, gently rub it over their whole surface, and with the point you can easily detect any cavities of decay, unless they are small and it would be better to defer the use of an explorer till some future appointment. Take the shorter piece and rub it lightly over the teeth to show there is nothing dangerous in it, and say I will place this in the handpiece of a dental engine and you will see that it revolves so rapidly that it will accomplish a great deal of work in a very short time. This porte polisher will hold it securely. With the point clean between the teeth and near the gum margins, but for the front of the teeth the most satisfactory thing I have ever used is a small felt wheel, as that material will absorb and retain moisture, and the powder will become embedded in its surface. As there is none small enough sold at the depots, you can purchase a large thin wheel and with a tube punch make one the fourth of an inch in diameter, cut out as many as the material will allow with a sharp knife, slice each piece in two or three small wheels. The cost you will find to be so slight that you will never be tempted to do such a great wrong as to use one of them on a second patient.

The tapering screw mandrel with shoulder is a convenient tool for carrying them. Dr. Wood's rubber caps, if they were smaller, would be an excellent thing; but even the smallest, if not used with the greatest care, will lacerate the gums fearfully, especially on the lateral incisors.

Probably by this time the patient has become accustomed to having the teeth "played with," and, finding you are very careful not to do anything that will give pain, you can commence with your felt wheel, dipping it occasionally in the wet tooth powder which you will have in convenient reach on your table. You will soon find your patient enjoying the work by the remarks : "I like this. Isn't this splendid. I'd like to come every day and have my teeth cleaned, its so pleasant. I will tell all my friends to come here." If there should be any portions of tartar remaining they can be removed with a small scaler. With a syringe wash off the teeth with water at a temperature of about 100 degrees. If there should be any large cavities and you are certain there is not an exposed pulp, they can be washed out, but be very careful to direct the point of the syringe toward the outer wall of the cavity. After drying with absorbent cotton, with the dressing pliers apply a pledget of cotton dipped in beechwood creosote, oil of cloves, and oil of peppermint. Cover with another pledget dipped in red gutta percha dissolved in chloroform, the proper size to neatly fill the cavity. Patients will often say, "this tastes like candy." It seems a great stretch of the imagination to believe that creosote tastes like candy, but if they think so I do not object.

You may think it very absurd in me to explain every little movement you are to make with the timid patient. It is these little things that imperceptibly accustom them to the use of instruments in the mouth, and your patience and kindness have given them such confidence in you that they are willing to do anything you ask. Remember how much there is at stake. You may be making patients for life. One cross word, one slip of an instrument lacerating the gum may send your trembling patient howling from the chair where it will be very difficult to persuade her to return. You must be so guarded in every movement that you will never allow such an accident to occur. You must impress upon the minds of patients the necessity of having the teeth examined frequently, especially if they are inclined to decay rapidly. Neglect will cause very serious consequences, but as they will regard a visit to your office as something to be desired, you will have very little difficulty in persuading them to follow your advice. As they grow older and can appreciate the value of a beautiful set of teeth they will be still more desirous of visiting you. When the sweet doves that present their lovely little bills for your inspection, and the lovely large bills you present to their parents for their inspection will be very small remuneration for the great benefit you have conferred upon them.

## ALUMINUM CROWN CORRESPONDENCE.

SALEM, Mass., July 13, 1898.

T. F. CHUPEIN, D. D. S., Editor.

Dear Sir:

In July DENTAL OFFICE AND LABORATORY I see reports of two aluminum crowns. I will add my experience.

I set an aluminum crown on lower first molar with cement, and at the same sitting filled distal surface of second bicuspid with alloy, filling, not touching, crown. In filling, several pieces of alloy clung to crown, but I carefully removed them. Four hours afterward patient came in and I found the crown turned to a frosted appearance, was hissing and quite hot. Sides of crown badly eaten and split. Removed crown with my fingers. Cement was intact, as was also the alloy filling.

I will forward you this crown by mail.

Sincerely,

ALFRED A. FROST, D. D. S.

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ELIZABETH CITY, N. C., July 16, 1898.

Editor DENTAL OFFICE AND LABORATORY.

Sir:

I was very much interested in Dr. Todd's experience with aluminum crowns, as published in July number of DENTAL OFFICE AND LABORATORY, as I have recently had some annoyance of the same kind.

Several years ago I crowned the left lower third molar with an aluminum crown. The patient is a married lady, about 35 years old now. About a week ago she came in my office to have me attend to two small places that had worn through. The crown was set with cement. I simply made a small under cut and filled the two little places with amalgam, and dismissed the case; but was very much surprised the next morning to receive a message from the lady that the entire crown was off, and wanted an engagement to have it put on. She brought the crown carefully wrapped up, and handed it to me. Instead of the two small holes in it the whole crown was nearly gone. What was left had the appearance of having been in some preparation which had dissolved or eaten it away. It was not thicker than ordinary writing paper. Just a band of it was left, which had been eaten into.

The cement was still intact on the natural crown. I had never heard of one doing this way before I saw Dr. Todd's article.

Very truly yours,

J. H. White.

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Birmingham, Ala., Aug. 2, 1898.

Dental Office and Laboratory.

Gentlemen:

Have just seen Dr. Geo. L. Todd's (Philadelphia, Pa.), experience and the editor's remarks on aluminum crowns and amalgam in July issue of Dental Office and Laboratory. Not long since I had a little experience with aluminum and amalgam. A Mr. F., about 38 years of age, of sanguo-bilious temperament, was wearing on second left lower bicuspid an aluminum crown with cusps filled with amalgam. Had given perfect comfort for about eighteen months. Early after arriving at his office, he noticed a peculiar taste and soon he felt some heat, and on investigating he found instead of his well-crowned tooth he had quite a chemical exhibition. He came to my office a few minutes later, and by this time the entire corronal portion was gone, leaving the amalgam on top. On the neck of the tooth was yet a portion of the crown, all frosted and sizzing, producing heat enough to be very uncomfortable for the surrounding tissue. With an excavator the remaining portion was removed and found to be entirely eaten up, and crumbled up between my fingers. The crown was set with phosphate which was in perfect condition, and it was only after wearing a small hole in the crown, and allowing the saliva to enter, that set it off. Immediate relief after removing the aluminum. Moral.—Never use amalgam with aluminum.

E. A. Wilson, D. D. S.

THE

Dental Office and Laboratory.

FOURTH SERIES.

VOL. XII. PHILADELPHIA, NOVEMBER, 1898. No. 6

# THE CONSTRUCTION OF CROWN AND BRIDGE WORK.

BY THEODORE F. CHUPEIN, D.D.S., Philadelphia, Pa.

[SIXTH PAPER.]

In our former papers on the subject of crowns, we made no allusion to the Bonwill crown, or the Davis crown, the Logan crown, or the Removable-pin crown, because as these crowns are manufactured for the dentist, the latter is only called on to treat the root, fit the crown and insert it, so that he has nothing to do with the construction.

We think we have pretty well gone over the ground for the construction of *crowns* of different styles in the papers which have preceded this, and have endeavored to illustrate the subject so thoroughly as to make it clear to any of our readers who will read with the desire to understand the subjects.

We next propose to take up the subject of *Bridge Work*. In this, as we did in crown work, we will first treat the simplest case, and advance by easy stages to the more difficult.

In Fig. 77 we illustrate a case for the supplying of a lateral incisor. The cuspid and central incisor are both vital teeth. The first procedure will be to grind a small pit on the palatal surfaces of each of these teeth. (See cut.) The pits need not be either *large* or *deep* at this stage. The making of these pits is best done with a *minute cavity corundum point*, or, if such be not at hand, with a small size *fine cut plug finishing bur* like Fig. 78. The pits need not be deeper than the thirty-second of an inch. The pits being formed, an impression is taken *with plaster of Paris*, which shall include the space and *at least* two teeth on each side of the space. To take the impression use *quick setting plaster*. About a tablespoonful of water is put into a bowl, next a pinch of salt—not more than will lie on the end of the large blade of a pen-knife will be sufficient for this quantity of water

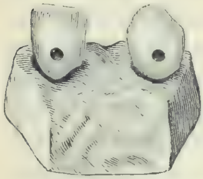

FIG. 77.

This is stirred in the water until it is thoroughly dissolved, then the plaster is sprinkled into the water from the end of the spatula. The plaster should be entirely *water soaked*, after which it should be stirred in the bowl until it is perfectly smooth, creamy and free from all lumps. It is then quickly, not hurriedly, conveyed into an impression cup, like Fig. 79, and then carried to the mouth so as to obtain an impression of the teeth and space which is to be supplied. Before mixing the plaster, as we have indicated, it is well to wipe the teeth and gums dry with a napkin, and then, with a camel hair pencil, thoroughly paint these parts with some of Johnson's ethereal soap, so as to prevent the plaster from adhering to the necks of the teeth, as it is apt to do. After the gums and teeth are thus painted, the patient is directed to hold the lips away so they will not fall in contact with these parts, for if they do, the lips by their motion will rub off the ethereal soap. While the patient is thus employed the dentist can mix the plaster, as we have described, and convey it to the teeth and space, the impression of which he is desirous of securing.

FIG. 78.

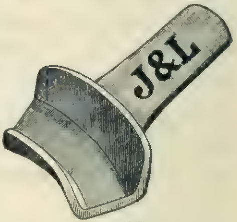

FIG. 79.

The cup, with its batter of plaster, is carried to the parts in such a way as to exclude all air bubbles, and held steadily in place until it hardens thoroughly. If the Ilaster used for taking the impression be *quick-setting plaster*, or what is sold as *impression plaster* (which should always be used for taking impressions), it will set quite hard enough to admit of removal by the time the operator counts 500 *moderately slow.*

The impression is removed by moving the cup up and down, or from side to side *gently*, or a few drops of water may be squirted over the plaster, holding away the lips when doing this, so as to break up the adhesion. *It should come away perfect*, without any of the plaster adhering at the gum margins near the necks of the teeth, which it will do if the plaster is permitted to get *right hard*, but when the teeth are "fan-shaped" it is almost impossible to prevent a slight fracture of the plaster at these points. It is best, when conveying the batter of plaster in the cup to the teeth, that this be as *thin as possible.* It should not be so thick as to "curl" or "crack" when it is carried to position. Besides this, when conveyed to the parts *thin*, it takes a sharper impression, and there is less liability of fracture at the necks of the teeth, if permitted to get quite hard.

The impression being removed from the mouth, it is then *luted* at each end as shown by Fig. 80. The luting of the sides of the impression may be accomplished either with plaster of paris or with mouldine. Plaster accomplishes the object better, but is more tedious. To lute the sides of the impression with plaster, the impression is moistened in water, and fresh plaster, *mixed creamy*, is conveyed with a knife blade to the sides of the impression, and added to the impression, little by little, until the sides are built up as is shown by Fig. 80. The same thing may be done with mouldine, but unless this be very carefully done, the metal which is poured into the impression is apt to leak out by some minute unperceived vent, and thereby spoil the impression. The object of luting the impression is to prevent the escape of the fusible metal which forms the die which is to be the guide for the workman. The die formed by this process is represented by Fig. 77.

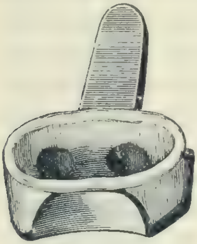

FIG. 80.

A die being secured by means of the manipulation we have described, *small pieces of pure gold* are burnished and most accurately fitted to the *palatal surfaces* of the *cuspid* and *central incisor*. The small pits which were formed on the surfaces of these teeth in the mouth, are accurately reproduced on the die, and the pure gold (about 32 gage) may be readily pressed into these pits. The object of forming these pits, first, is to know exactly where the retaining pin is to be inserted, and where the pure gold is to be pierced for their insertion. A porcelain tooth is now selected of proper shade and size. As to the size we will say that it should be *a little wide for the space;* that is, *it should not pass freely between the two adjoining teeth*, but should be *the merest bit wider* so as to very slightly lap the central and cuspid. The porcelain tooth should be backed, and the backing riveted to the tooth before any grinding is done. We prefer to back the tooth with platinum, because with this metal we can make the backing fit the tooth more accurately than with 18 or 20 karat gold ; and as the backing is entirely covered with solder there is no advantage in using these stiffer metals for this purpose. Besides, by backing the tooth first, should the grinding encroach on the pins there will not be any liability of fracturing the tooth as there would be if the backing and riveting be done after.

The next thing will be to make the retaining pins. They are made from the pins in an old vulcanite tooth by breaking this and saving the pins.

It is well in forming these plates to use a piece of gold which will cover not only the palatal surfaces of these teeth, but which will lie slightly also on the mesial and distal surfaces of the central and cuspid. In forming the plates in this way, the retaining pins may be inserted into their respective holes and made to go accurately into position, as the part lying on these teeth will aid in sustaining the pieces of gold accurately. The retaining pins are now passed through the small holes of the plates and the protruding ends are soldered with the *minutest pieces of solder.* This is shown by Fig 83. The plates and retaining pins are now tried in the mouth. The pits first formed are deepened so that the retaining pins may enter the cavities and permit the plates to lie in close contact with the palatal surfaces of the incisor and cuspid. Should the deepening of these cavities cause pain, this may be mitigated by the application of chloride of zinc, heated air, dehydration and the application of absolute alcohol, or by the spraying with chloride of ethel, cataphoreses, or any of the means used for the alleviation of pain, such as is employed in the preparation of a cavity of decay for filling. In deepening these cavities for the reception of the retaining pins, it is well to cut the cavities on a line with *the long axis* of the tooth, since the bridge will be slipped into place in this direction. Should they be cut in the direction from the palatal towards the labial surface, the palatal plate and the porcelain facing would not *bear equally* when the bridge is inserted. Another impression is taken with plaster with these plates in position. The object of taking this second impression is for the purpose of obtaining *greater certainty.* If the model be used which was made from the first impression, the different parts would have to be stuck together with adhesive wax, and then lifted off from the model in order to invest the bridge for soldering. To lift off the bridge is a very delicate operation, and despite the utmost care it will get bent or twisted. Besides this, in sticking the various parts together it is almost impossible to prevent some of the adhesive wax from sticking to the model as well as to the bridge. By taking an extra impression with the various parts in place—which is a simple thing—a model is made from it with *plaster and sand,* and the tooth is mounted on this model. When the workman is ready to invest, all he has to do is to stick the part together on this sand and plaster model. It will not matter whether the adhesive wax sticks to the model or not, as the model (being cut down to its smallest proportions) is invested as well

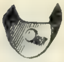

FIG. 83.

as the different parts of the bridge and the parts soldered. Done in this way there is the *certainty* of not disturbing the relations of the different parts of the bridge. Before investing this sand and plaster model with the bridge in place, the model should be soaked in water. The porcelain facing is secured to the little plates on the teeth with adhesive wax gradually heated and soldered. In soldering it is well to let the solder flow well *all over the pure gold plates* on the palatal parts of the teeth, as these, having been made of thin and pure gold, which is very soft, must be well stiffened with solder to give stability to the bridge.

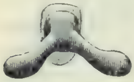
FIG. 84.

When thoroughly cold it is removed from the investment and boiled in acid and water. The case is then polished, when it is ready for insertion. To insert bridges, generally, we find it best to let an assistant mix the cement while the operator wipes the teeth dry, on all surfaces as well as the gums, protecting the parts from all moisture by means of a napkin properly folded about the teeth ; the bridge is put in place when all is ready. Should an assistant not be at hand, we sometimes apply *thin rubber dam* about the teeth, and in this way secure absolute dryness. The cement should not be mixed thick or pasty, but should be like thick cream of the consistency of glycerine. A cement, mixed of this consistency, which will *set hard* in not more than five minutes, is the proper cement to use for bridge work. The finished bridge is shown by Fig. 84.

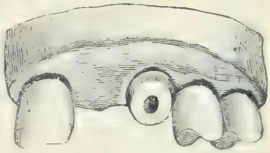
FIG. 85.

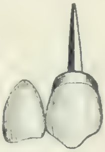
FIG 92.

The next case is shown by Fig. 85. In this case the lateral incisor has been lost and the cuspid root remains. The root of the cuspid is prepared for a Richmond crown. The root end is left about the one thirty-second of an inch above the gum margin, and made level with the facers. Fig. 86.

The enamel is stripped from root near its face, and prepared for the accurate fitting of the band which is to encircle it. This may also be accomplished by the aid of the various instruments put on the market for this purpose, or by Dr. Long's adjustable root trimmers. Fig. 87.

A cap is then soldered to the band. This is accomplished by laying the band on a flat piece of gold plate. The manner of doing this is shown in Fig. 88. These cuts, while they do not exactly show the band or ferule which has been fitted to the end of the root, will exemplify the manner in which it is soldered to the metal which forms the cap.

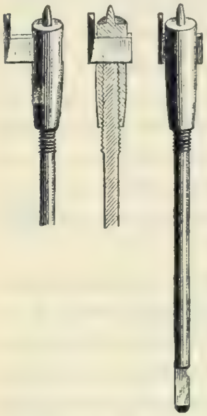

FIG. 87.

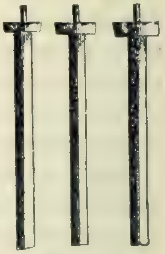

FIG. 86.

The soldering should be done with the smallest particle of solder. In soldering the band to the cap, paint the cap with creamy borax and water, then heat this red hot. This will cause the borax to melt evenly all over the cap, then lay the band on the cap and the piece of solder being placed next the band on the cap will flow evenly when heated, *providing the fitting is perfect.* If the band be laid on the cap before the borax is melted in this way, it will be moved from its position by the swelling up of the borax when the heat is applied. The cap being soldered to the band, it is boiled in acid to remove the melted borax, when the excess of the cap is cut away even with the edges of the band. The cap is then placed on the root to see that it fits perfectly. It is then removed, and the root canal is prepared for the reception of the dowel. The root canal is generally made tapering, which may be accomplished by means of tapering fissure drills, many forms and sizes of which may be procured at the dental depots. Should these not be at hand, however, the ordinary pointed fissure drill may be used. When these are used in the engine the root canal may be gradually increased to the size desired by using, successively, the sizes from smaller to larger. These fissure drills serve another purpose. The depth of the cut eaves of the drill, down to the point where the shank of the tool begins, will indicate the depth which has been reamed out, will generally be a guide as to how long the dowel should be In cuspid roots, where the dowel should be a little longer, the taper may be continued, by the use of successive cone burs.

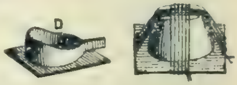

FIG 88.

The canal being prepared, the cap is set on the root end. A ball burnisher is pressed on the cap in the vicinity of the hole in the root. This causes the cap to be depressed at this point, and will indicate where the cap is to be pierced for the reception of the dowel. It will sometimes happen that by siezing the protruding end of the dowel the cap will be brought away with it without disturbing the relations of the two parts, when it may be soldered without the trouble of investing; but when this does not occur, the dowel must be united to the cap with adhesive wax, when they are removed carefully, invested and soldered.

After soldering, the bite is taken with *smallest piece of wax.* We insist on the smallest piece of wax for taking the bite in these cases, as with a small piece more certain results are attained. If a large piece be used it shuts off the view, and should teeth not occlude naturally it will not be known. A large piece of wax obstructs the sight; when a smaller piece is used the operator can see clearly when the teeth are brought in exact opposition.

The bite is then removed. A small impression is taken of the opposing teeth with wax, and an impression of the capped root is taken, *with plaster*, of the parts to be replaced. A model is run into this impression *with plaster and sand.* The model being removed from the impression, the bite is placed on this and the model of the opposing teeth (which was taken with wax) is placed in the imprint of the bite, and an articulating model is run on the plaster and sand model: or preferably, by placing the models in a crown articulator. (Fig. 91).

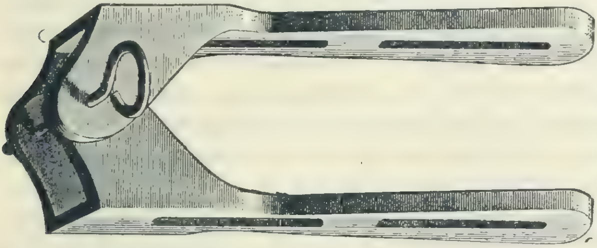

FIG. 91.

The protruding end of the dowel is now cut close down to the cap. A cuspid tooth, of proper shade, size and character, is then backed and ground to fit the cap accurately, when it is united to these parts with adhesive wax. The lateral incisor dummy is likewise backed and ground to fit in its place; the bite indicating how these teeth (the lateral dummy and cuspid crown) are to be placed. Adhesive wax is now used to unite the dummy to the crown. It will not matter if the adhesive wax flows over the model as well as over the bridge, because as this model was made of plaster and sand it will not have to be removed from the model for investment, but may be soldered in this by first cutting it away from the articulator, then trimming the model down to its smallest proportions, soaking this in water while more investment of plaster and sand are mixed, when the model, with its adherent bridge, is invested into it.

The case having been invested, it is trimmed preparatory to being heated up, previous to soldering. In trimming the investment, be sure that there will be a *free access* of the blaze of the blowpipe so that this will readily reach the parts over which it is designed to melt or flow the solder. To make this clearer, the investment should be trimmed as shown by Fig. 91A (not like Fig. 91B), for in the latter case the blaze would have difficulty in reaching the work unless the blaze were "pointed," which does not permit the solder to flow as smoothly as a full blast.

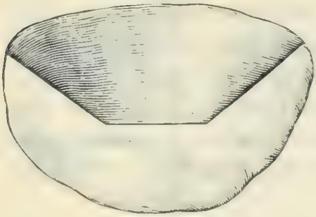
FIG. 91A.

The bridge is then cleaned of all the adhesive wax, and placed in the flame of the Bunsen burner, where it is permitted to *heat up gradually.* When well and thoroughly heated, it is transferred to the asbestos soldering block, and soldered. In soldering the solder is cut into small pieces an eighth of an inch square, and applied to the work. Borax is applied, but it is well to apply *dry powdered borax* in small quantities at a time, because if the borax be mixed to a cream with water, and thus applied to the work, the sudden application of this to the heated work is very apt to crack or check the porcelain facings, so that this is an important consideration. When the work is thoroughly heated, as we have indicated, the water of crystallization passes from the borax immediately, and leaves this evenly melted over the parts, and serves as an admirable flux for the solder which spreads, like water, over all the parts.

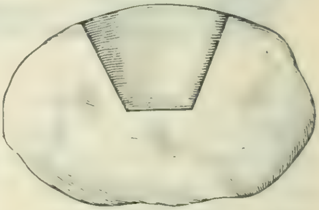
FIG. 91B.

When the work is thoroughly cold the investment is cut away, and all adherent plaster and sand removed, when it is boiled in pickle to dissolve the melted borax which adheres to the work.

The bridge is then ground into proper shape with small corundum points and wheels, after which all scratches are removed with the proper wheels for this purpose, and polished in the polishing lathe.

In making a bridge, such as we have just described (which is shown by Fig. 92, see page 165), it is well that the dowel be made of *square wire*; for, should it be made of round wire, the lower teeth striking close to or against the dummy is apt to throw this *outwardly*, because the round dowel does not offer sufficient resistance to this pressure, while the square dowel offers more resistance.

Should this not be done, it will be necessary to place a small plate on the palatal surface of the central incisor in order to resist this tendency to move outwardly, as shown in Fig. 84.

The bridge is inserted in the manner we have already described.

[TO BE CONTINUED.]

# THE IMPORTANCE OF ESTABLISHING A TECHNIC AS WELL AS LITERARY STANDARD FOR COLLEGE ENTRANCE.

By S. H. Guilford, D.D.S., PH.D., Philadelphia, Pa.

Read before the National Association of Dental Faculties, August 29, 1898.

The good results accomplished by this association in its sixteen years of existence are not only universally conceded, but will ever remain as proof of the wisdom of its organization and its general endeavors to elevate the standard of practice. It was realized that this could only be done by sending into the profession men better equipped for practice than the majority of those then entering it. This required certain changes in the prevailing methods of college instruction, some of which have gradually been brought about while others are in course of development. The association first addressed itself to lengthening the course of study. The recognition of five years' practice as an equivalent of one year's course in college was done away with and an invariable two years' course demanded.

Then came the lengthening of the winter term from four to five and subsequently to six months, after which another year was added to the college curriculum.

With all these advancements, however, beneficial as they were in their results, it was found that a proportion of the yearly graduates were not up to the standard demanded either by the public or the profession, and another change became necessary to remedy the condition. At the time of the organization of this association, and for many years afterward, there were very few dental colleges that inquired into the earlier educational training of those who applied for admission. It seemed to have been taken for granted that anyone applying for admission must have had sufficient mental training to enable him to grasp and pursue the various studies of the curriculum. This proved to be erroneous, for it was found that while a student might, by close application, manage to pass his examination in the theoretical branches, he did not have that general grasp of these subjects which was necessary to make him a well-rounded man.

Following this discovery came the adoption of entrance requirements, which necessitated a certain amount of mental training in the schools before the candidate could be allowed to begin his collegiate studies. These requirements were very moderate at first, but were gradually increased until they equaled the completion of a full grammar course.

This far the plan had worked admirably, principally because it was gradual. Two years ago, however, a further advance was decided upon by which in the course of a few years the entrance requirements were to equal completion of a high school course. This change was so radical in character that it worked a hardship upon many students who were not able to meet it, and who in consequence were debarred from college entrance.

As a result of this, one year ago the latest advance was annulled and the requirements reduced to their previous standard. This retreat from an advanced position was regretted by many schools, and the question of some advancement from our present standard will doubtless come before the association at its present meeting.

In anticipation of this your essayist decided to prepare this paper for the purpose of presenting certain views upon the subject and offering them for your consideration.

As previously mentioned, the raising of the entrance requirements to equal a completed grammar school course has proven itself a wise act, and none have cause to regret it. With less preparatory training it was found that the student's mental faculties had not been properly awaked nor correct habits of study formed, and that he was in consequence placed at a disadvantage in trying to acquire a knowledge of at least some of the more abstruse subjects which he was expected to master.

In view of the fact that the advancement to the present standard has worked well, the question naturally arises as to whether a further advancement would not be advisable, and, if so, what form it should take. Strange to say, we have thus far been viewing and treating the subject of preliminary requirements from a single standpoint. All of our discussions as well as our enactments have dealt solely with the mental acquirements and possibilities of the proposed student, entirely overlooking or ignoring the equal or more important feature of manual dexterity or mechanical bent.

All of us are fully aware of the absolute importance of mechanical talent in the practice of our profession, and we are equally cognizant of the fact that unless this talent is innate it will always be lacking, for it cannot be acquired. No amount of training and instruction can develop a skillful mechanic out of one who lacks the mechanical instinct. If this be so is it not important that we, as teachers, see that those who place themselves under our care for preparation for their life-work are possessed of this necessary qualification? In former times, before the wave of progress had swept across the beaten path of dental education, when the student received his preliminary, and at times the greater part of his dental training in a preceptor's office, or rather laboratory, it was an almost universal custom for the practitioner, before accepting a student, to ascertain whether he possessed a natural bent in the line of mechanics.

This was done by inquiring into the young man's turn of mind, his fondness for tools and their employment in constructing some of the simple mechanisms so necessary to the complete happiness of boyhood. In addition to this it was customary to accept the student for a certain period upon probation, to still further ascertain his adaptability to his proposed life work.

While in these later times we recognize the shortcoming of our predecessors in not demanding at least some educational requirements from their students, may we not at the same time take a hint from their methods, and incorporate some of their requirements into our own? In other words, has the time not fully arrived when we should demand mechanical talent as well as scholastic acquirements as preliminaries to entrance upon the study of dentistry?

It would seem that in this matter as in many others we have been rather blindly following in the footsteps of our sister profession, medicine, not fully appreciating the differences that exist between them. Dentistry occupies rather a unique position among the sciences and professions, in that to be of the greatest service to mankind the practitioner must necessarily be possessed of considerable manual dexterity.

This is not required of the lawyer, the theologian, or the physician in ordinary practice, for their success depends mainly if not entirely upon the development and use of their mental faculties. For one undertaking the study of any of these professions it is therefore quite proper that the only qualification demanded should be a scholastic one.

Should the student of medicine prove to be possessed of mechanical talent, he will, after graduation, naturally drift into the special practice of surgery, which will be more to his taste, and afford him a better field for the employment of manipulative skill. Should his taste not run in the mechanical line, he still has in the domain of general practice and some of the specialties a large field for successful effort.

With us it is different. To properly serve the needs of his patients the dentist must be skillful with tools, for so large a part of his daily work is manipulative in character. If he lacks this skill he must prove a failure, for in the practice of dentistry there is no place for the employment of the mental faculties alone as there is in medicine.

The vocation of the instrumental musician bears some little resemblance to our own in that it requires for its successful pursuit not only the development of the mental and esthetic qualities, but an absolute dependence upon manipulative ability. Without the latter the former quality would be of no avail. A teacher of instrumental music would probably prefer to have as his student one with a liberal education, for he would add luster to his chosen calling; but he would certainly not accept or retain as a pupil, no matter what his literary attainments may be, one who was lacking in technical ability or possibility.

Why, therefore, should we do less?

The dentistry of to-day owes much of its progress and high standing to the class of men who entered it from thirty to sixty years ago under the private studentship system. Almost without an exception they were men possessed of a high order of mechanical and inventive ability, and they were so because they were selected from the mass by their preceptors.

It therefore seems to me that it would only be the part of wisdom for us to so amend our requirements as to include manipulative ability, and where this is lacking to reject the student and advise him to take up some other calling. It certainly does not seem just to accept a student who is by nature lacking in that quality which is absolutely essential to his success in practice.

With our greatly improved methods of systematic technic instruction we have certainly accomplished good results with the material given us, but how much better might have been the results with the material properly culled. Many students, as we all know, manage to work along through college, performing their allotted tasks and passing the required examinations, who we are morally certain will not be successful in practice because all that they accomplished was performed in a labored way, without any display of actual skill.

Are we just to them and to the public in permitting this? Should we not discover the lacking quality before accepting them, or find some way of discovering it in the early part of their course and kindly advise them to change their vocation?

If by some extra effort on our part we were able to develop skill where natural ability is lacking the conditions would be different, and we would be relieved from the necessity of considering the question; but unfortunately we cannot grow the plant where seed or soil is lacking.

The question now arises, What shall the mechanical standard be, and how may it best be incorporated with the other requirements? This is not for me to answer. It is a problem, and its solution will require the united wisdom of the members of this association.

By way of suggestion, however, I would offer the following:

1. The student should be assigned a desk or bench in the laboratory, furnished with the necessary tools and material, and be given an appliance or device which he is to reproduce as accurately as possible.

2. The task assigned should be such as to preclude the probability of his having done work of exactly similar character before, so as to guard against mere automatic repetition.

3. The ordinary laboratory processes, involving no special skill, such as repairs or additions to vulcanite plates, should be excluded.

4. In cases where the candidate has had no experience in the use of some of our special tools or processes, such as soldering, swaging, etc , the test should be simple in character, and might consist in requiring him to reproduce from a block of wood, by means of saw, file, and penknife, some geometrical form, as a cube, pyramid, or rhomb.

5. In cases where the applicant has had some laboratory instruction or practice before coming to college, the test should be a little more severe in character. Inasmuch as regulating appliances are so varied in character, and often combine a number of different manipulations in their construction, such as filing, bending, soldering, etc., the construction of one of unusual design would probably furnish the best all around test of ability.

6. During the test the student should be isolated until the task is completed. A competent demonstrator should watch the progress of the work from time to time, so as to form an opinion of the candidate's handiness with tools, but should offer no aid, even in the way of suggestion.

# CONTOUR AMALGAM FILLINGS; MATRICES, HOW TO MAKE AND APPLY THEM.

By **Theodore F. Chupein**, D. D. S., Philadelphia, Pa.

In the insertion of large amalgam fillings where the contour has to be restored our first effort is to obtain a perfect approach to the neck of the tooth. This we accomplish by passing a string twice around the tooth and tying this tightly; forcing the ligature well on the neck of the tooth before tying; and should it show a disposition to drop away, keeping it in place by smearing a little phosphate cement on the tooth at two or three points next the string.

On the return of the patient, the dam is applied and a thorough preparation of the cavity made, making sure that the borders of the cavity are strong. If in doing this the cavity should be left "saucer-shaped," and the making of undercuts would either weaken the tooth, or cause too much pain, we may resort to two expedients: The one is to smear over the floor of the cavity a small quantity of phosphate cement to hold the first piece of amalgam in the cavity, or to cut the cavity, on its masticating surface, in the form of a "dove tail" connecting this with the proximate cavity, or both, as is shown by Fig. 1.

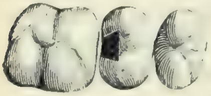
Fig. 1.

The next thing, after the cavity is prepared, is the forming and applying of the matrix. There are many devices on the market for retaining the matrix in position; but after the trial of many, we have abandoned all for those which the dentist may make for himself. If a quick-setting alloy be used, a retainer may be used, if the dentist prefer the employment of one of these; but if a slow-setting alloy be preferred, it will be necessary to leave the matrix encircling the tooth until the alloy hardens, for fear of destroying the filling in the attempt to remove the matrix, or least the occlusion of the teeth forces the alloy out of the cavity before this has thoroughly hardened.

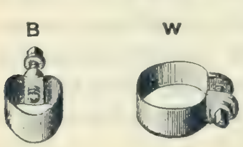

Fig. 2.

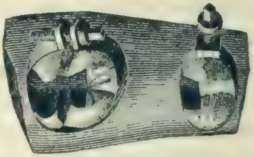
Fig. 3.

A simple band matrix, such as is shown by Fig. 2 and Fig. 3, will not produce a contour, for the reason that it binds at the most prominent part of the tooth, leaving the neck of the tooth unapproached by the band. This is clearly shown by Fig. 4, which illustrates the employment of such a matrix. The band for a matrix should be cut somewhat circular, as shown by Fig. 5, not wider than the figure, often a little narrower. In this form the *shorter curve* embraces the neck of the tooth, while *the larger* stands away and produces the contour like a funnel. Should there be a dip of the decay at the neck of the tooth extending beneath the gum margin, a compensating form should be given to the band, as shown by Fig. 6.

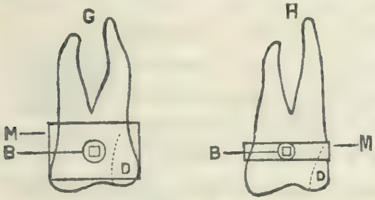

Fig. 4.

The band is now passed around the tooth, and the ends brought up close against the buccal face by the means of a pair of flat-nose pliers, in the same way as one would proceed if he were making a band for regulating purposes, illustrated by Fig. 7. The band is now lifted off the tooth carefully, and heated *red hot before the pliers are released.* By doing this, the ends will not spring away from each other, as shown by Fig. 8A, but will lay in close contact as shown by 8B. There will not be any impediment in lifting off the band, because as the wide, or large part of the tooth is decayed away, this part will no doubt be quite as small as it is at the neck, hence the band should come off easily. The band is now laid on the soldering block, the ends smeared with borax and water, and a minute piece of silver solder laid at the junction. The solder is melted and the matrix is finished. The matrix is then applied. If it be found to be a little loose, a small wedge of orange wood may be passed between the matrix and the root. This will draw it up as shown by Fig. 9.

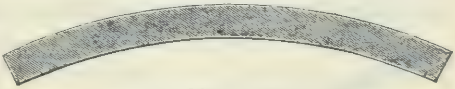
Fig. 5.

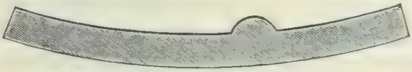
Fig. 6.

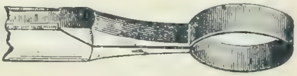
Fig 7.

Another plan of applying a matrix, not as reliable, but more expeditious, is as follows: We have a pair of pliers which we filed up ourselves. A pair of long flat-nose pliers, like Fig. 11, were procured and the temper taken out by heating red hot. These we filed into extreme attenuation, as shown by Fig. 10, when they were retempered. After the band is applied to the tooth, and drawn up close, like Fig. 7, the ends are seized with ends of the pliers, Fig. 10, and twisted or turned over and over like the joints of a stovepipe, until they lie in close contact to the tooth. A wedge may be applied to this matrix in the same way as the soldered matrix, illustrated by Fig. 9.

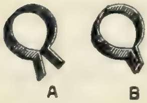

FIG. 8.

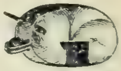
FIG. 9.

We are now ready for filling. Should the proximate cavity be too "saucer-shaped" to hold the filling alone, a small quantity of phosphate cement is smeared over this part, and the amalgam added to it and pressed all over in every place, and then afterwards brought over the masticating surface into the "dovetail." It is important that all *margins and borders* be made strong, for, if reliance be placed on enamel alone, this will chip away or fracture, and the integrity of the filling destroyed. In finishing such fillings it is well to dress away until the opposing teeth strike clear of the filling.

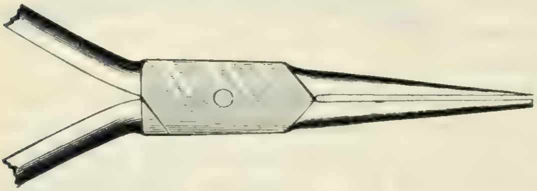
FIG. 10.

When a filling of amalgam is inserted with the aid of such a matrix, the contour may be perfectly restored. The matrix is left on the tooth until the alloy hardens. It is then cut off by inserting any thin sharp instrument between it and the tooth and pried off. As the matrix is made of very thin German silver, nickel, or copper, this will not be difficult.

The filling is then ground and polished. This may be readily accomplished by applying the dam and using fine sand-paper disks, cavity burs, and fine small corundum points in the dental engine. Should there be any amalgam at the cervical margin, which may have been forced between the matrix and the tooth (but this will never occur if the matrix be properly applied and fitted), this may be readily removed by means of a small fissure bur in the dental engine, working at the neck of the tooth in the interdental space from the buccal surface. This is better accomplished after the dam has been removed, as with it in place the fissure bur is apt to catch and tear the dam. After this part is made perfectly flush and smooth, the

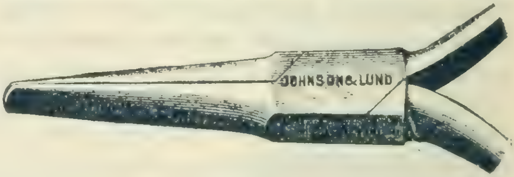

FIG. 11.

parts are polished by means of a stick in the screw-clamp port polisher of the dental engine, the wood being screwed into the port polisher, and the protruding end being brought to a fine point, and charged with powdered pumice and water.

## MUSCLES OF EXPRESSION.

By W. J. Blair, Student, Jonesboro, Miss.

The beauty of the human countenance is more complicated than that belonging to most natural objects. The chief beauty of the countenance, however, lies in what is called its expression. The muscles of the face are the instruments of the mind in the expression of thought, feeling, and emotions, so it is important to understand the anatomy and functions of these muscles in the art of constructing artificial dentures. How easy the expression of the countenance can be affected by mal-positions of the teeth or by unskillfully constructed artificial dentures. I will consider the functions of a few of these expressive muscles in connection with artificial dentures. I will consider the functions of a few of these expressive muscles in connection with artificial dentures. The orbicularis oris is regarded by anatomists as a sphincter muscle and all the muscles of facial expression communicate with this complicated one. The muscles that are connected with the orbicularis oris should remain at ease, as undue prominence at one point will change every expression of the face and not a muscle will perform with ease and grace its appropriate function.

The levator labii superious alæque nasi is inserted into the wing of the nose and the orbicularis oris. The action of this muscle is to lift the wing of the nose and raise the lip, producing an expression of aversion.

Artificial dentures that are too prominent, causing undue strain upon this muscle, will change the office of the orbicularis oris producing a foolish expression. We will now consider the buccinator as an expressive muscle acting secondarily. This muscle takes its name from the word buccina, a trumpet, the trumpeter's muscle; a muscle of the cheek so called from its being much used in blowing the trumpet. This muscle is inserted into the orbicularis oris and its use is to draw the mouth upwards and outwards towards the ear.

The office of this muscle can be changed with artificial dentures that unduly distend the buccinator causing an abnormal action of the levator anguli oris, producing also an unnatural expression.

To cause a painful expression of the countenance we will consider the risorins a muscle which arises before the parotid gland and proceeds towards the angle of the mouth. This is the laughing muscle of Santorini. The mal-position of the first molar will cause this to entirely change its usual function. The first molar must be in its proper position, as either within or without will produce the same expression. The depressor labii inferioris and the levator labii inferioris are inserted into the lower lip and chin; one depresses the upper lip against the teeth, the other raises the lower lip, and the fulness of lower artificial dentures near the center of the lip will strain these muscles, causing a haughty expression. A weeping expression can be produced by the extreme fullness of a plate at the canine fossa of the upper jaw. The levator anguli oris will be strained, and the corner of the mouth will be raised. The buccinator will draw the mouth, changing the position of the risorins and producing a half-weeping expression. At death, when the muscles are entirely relaxed, the expression is not natural; but as soon as the muscles contract to their natural state during life, they give to the countenance its natural expression.

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[THIRTY-FIFTH PAPER.]

## LEADING QUESTIONS AND ANSWERS FOR DENTAL STUDENTS.

By Theodore F. Chupein, D.D.S., Philadelphia, Pa.

### Putrescent Pulp.

Q. After the very lucid exhibition of these cases by Prof. Litch in our last paper, how is it proposed to treat them?

A. The canals are thoroughly cleansed by syringing them out with warm water. The rubber dam is applied and the canals made perfectly dry. Meditrina, iodoform, or an alcoholic solution of hydronapthol, or peroxide of soda, may be used to destroy the mephitic gases. These are applied on minute shreds of cotton and carried to the root end and then sealed in with gutta percha, leaving a vent through this filling for the escape of gas should these agents not entirely prevent their formation. The treatment is repeated until a cure is effected.

Q. What agents are regarded as the best for the treatment of putrescent pulp, destroying mephitic gases, destroying Bacteria, etc.?

A. The bichlo-mercury is regarded as "the prince of germicides," while favorable results have been obtained with peroxide of hydrogen, peroxide of soda, the ethereal solution of pyrozone, Meditrina, the sulphate of quinine, etc., etc.

Q. How is it determined when such root canals may be filled?

A. When there is an absence of all odor, or when the cotton, which had been placed in the canal, is removed clean, white, and free from all stain.

Q. Is it the exudation from the remains of the pulp which impart the odor and stain to the cotton?

A. Not solely. The dentine surrounding the pulp is permeated with innumerable minute canals into which the odor is held, and the putrescent matter infiltrates and until the deodorizers, antiseptics and germicides used to cure the condition entirely neutralize these conditions, the cure cannot be radically effected.

Q. Is the cure of these cases effected rapidly?

A. Not always. Some cases yield readily, while others are difficult to control. It is best to renew the treatment, even in favorable cases, often, so as to be sure that no septic condition remains which may cause after trouble.

Q. After the cure is effected what is next to be done?

A. The root is filled.

Q. How is this done?

A. Many materials have been proposed for filling the roots of such teeth. Cotton, at one time, was the almost universal practice. Then silk, wood, gold, tin, lead, copper, wax, gutta-percha, oxychloride of zinc, oxyphosphate of zinc, etc., etc., each having had, and still have, their advocates.

Q. Should root fillings partake of the same nature as crown fillings—that is, should they be as dense?

A. Of this there is diversity of opinion; some contending that the root filling should be solid and well impacted, while others contend that the root filling should be easy of removal, in the event of after trouble.

Q. How do the advocates of the latter mode reconcile their reasoning?

A. They contend that experience shows that a tooth treated for putrescent pulp may remain perfectly comfortable for many years—some of these having a record of twenty years—when with no accountable provocation, pain, soreness, and swelling will be brought about, necessitating the removal of both root and crown filling, and a retreatment of the case. Hence should the root have been densely filled it would be almost impossible—to say nothing of the pain inflicted—to remove a solid root filling.

Q. What do the advocates of solid root fillings advance of their system?

A. That if the root be thoroughly treated, all septic matter removed, and all mephitic odor neutralized, a return to the diseased condition is impossible; that such roots ought not to be filled until all diseased influences are removed, when the roots as well as the crowns may be solidly filled.

Q. How are the roots filled?

A. A free direct access must be had to the roots; these are reamed out with suitable root reamers until it is judged by the depth that the reamer enters, that it approaches nearly to the root apex—when the filling is inserted.

Q. Which is the most important root to fill in the upper molars?

A. The palatal root.

Q. Why not the two buccal roots?

A. Ordinarily the canals of these roots are so small that it is impossible to locate them, and even when found they are so minute as to rarely give trouble even if left unfilled.

Q. How are they best located?

A. Dr. Callahan has advised the flooding of the nerve chamber with a fifty per cent. solution of sulphuric acid and water, neutralizing this with a saturated solution of bicarbonate of soda and water, when the sulphuric acid solution acting on the lime salts of the tooth will so clear the nerve chamber of all foreign matter as to leave all the openings discernible. These applications are only made when the tooth is isolated by the rubber dam. Should the buccal root canals be found of sufficient size for entrance, these are also reamed out and filled as the other roots are, otherwise dependence is placed on the action of antiseptics drawn into these by capillary attraction to neutralize any septic sequence.

Q. What is advanced by those who favor solid root fillings?

A. They contend that if such root fillings combine the qualities of density as well as antiseptic influence, they should be used in preference to others, hence the oxychloride of zinc finds favor with many as a root filling.

Q. How is this introduced?

A. A thin batter of this cement is mixed, when a few shreds of cotton are incorporated with it. This is carried to the root end and then solidly packed. After a few minutes the cement hardens when the remainder of the root (or roots) is filled, and afterwards the crown.

Q. Suppose after the most protracted treatment and test filling, after test filling inserted, the diseased tooth continues to give annoyance, pain or discomfort, what is to be done?

A. When all means fail after the most thorough treatment, the tooth may be extracted should it be a useless back tooth, with no antagonizer. But if it be an oral tooth it may be rendered comfortable, and be still retained by the plan suggested by Dr. Hullihen, of Wheeling, W. Va. He proposed to drill a small vent hole beneath the free margin of the gum to permit the escape of gas, the product of decomposition.

Q. How could the gas escape if the root were filled?

A. In performing this operation Dr. Hullihen did not propose to fill the roots at all: but to leave them free so as to permit the escape of gas from the roots through the vent.

Q. How is this best done?

A. A small drill, the size of a pin, is used to drill the vent. The drill is inserted from the buccal surface, about one thirty-second of an inch above the gum line, *beneath its free margin*. The drilling is continued until it touches and sinks suddenly into the nerve chamber. A small pin is now placed into this hole, and so cut that its length will correspond to the length of the hole drilled, and permit the head of the pin to lie in close contact to the tooth at the point of entrance. The other end of the pin, which may be distinctly seen protruding into the nerve chamber, may be covered with a small pellet of pink gutta percha The rubber dam may be now applied and the tooth filled with gold, amalgam, tin, cement, gutta percha, or any material which the operator sees fit to use.

Q. Why should you drill this vent hole beneath the free margin of the gum?

A. The object of selecting this locality is that the gum will heal over and close the vent lightly, and thus secure the double purpose of preventing the ingress of food that would stop it up, and permitting the escape of gas.

Q. Do you remove the pin from the vent hole?

A. Yes. After the tooth is filled and the dam removed, the pin, which was put there merely to prevent the filling material from obstructing the vent, is removed.

Q. Is this not a rather filthy operation?

A. It is not one which is recommended, and is only employed as "a derniere resort." While it may be presumed that there is a constant escape of mephitic gas exuding from this vent, the flow is so minute as not to be painfully apparent or perceptible. However, it is considered far preferable to have a tooth in this condition than to submit to its loss of usefulness or disfigurement by extraction.

Q. Is the operation one of permanency?

A. Some regard it only as a temporary expedient; yet cases are known where teeth thus treated have remained comfortable, and been useful for years, and where even the vent hole, after a time, could be filled, without giving further trouble, Nature seeming to come to the aid of Art in effecting the cure.

Q. Do we always find the pulp of teeth in this diseased or putrescent state?

A. No—sometimes the nerve chamber and root canals are found dry and apparently empty—the pulp having shrivelled up, and become, as it were, mummified.

Q. When the pulp takes on this condition does it not give pain as when the gangrene is moist?

A. We are not aware that it ever causes pain or gives trouble when in this condition.

Q. Does the tooth discolor or loose its translucency when the pulp thus dries up?

A. The change in color is so slight that it is never noticed.

Q. Does any odor emanate from the root canal when the tooth has thus lost its vitality?

A. No odor can be detected, and such teeth never need treatment.

Q. What is done for them?

A. The nerve chamber and root canals are simply cleansed and filled, as also the decayed place in the crown.

Q. Does this condition supervene in all teeth?

A. No. It has been noticed to occur only in hard dense teeth, mature teeth, or in the teeth of those well advanced in life.

Q. What is supposed to cause this mummification or shrivelling up of the pulp?

A. The supposition is that the liquor which filled the dentinal tubuli is changed into secondary dentine, and the pulp being thus deprived of a free circulation of fluids, dries up from the lack of moisture.

Q. Is the pulp liable to give pain although not exposed.

A. Yes. Nodular formations of secondary dentine may cause violent pain.

Q. What is the cause of these formations?

A. The cause is not entirely understood; but it has been noticed that the bountiful supply of the bone-forming material in food, coupled with a good organism and a plenty of fresh air and exercise will sometimes lead to the formation of these nodules in the pulp cavity.

Q. How are these formations diagnosed?

A. The symptoms reported are not always reliable, so that these cases are difficult of diagnosis. The pain from them has been of a boring character, and more severe at night, and while in a recumbent posture, than in the day, when in a perpendicular one. These cases have also been diagnosed by the successive application of very hot and iced water to the tooth, the patient evincing excruciating pain when one or the other of these agents would be applied to a tooth thus affected. The pain from teeth thus affected is not continuous, but comes on in paroxysms.

Q. What treatment is proposed in such cases?

A. The devitalization of the pulp and the subsequent filling of roots and crown.

Q. Does the pulp take on any other disease?

A. Yes; we notice what has been termed a fungus growth, or polypus of the pulp.

Q. In what cases is this disease noticed?

A. Generally in teeth excessively decayed, where the whole of the dentine is eaten away and nothing remains but the weak shell of enamel..

Q. What is its appearance?

A. It looks like a pellicle of gum tissue growing within the cavity.

Q. How is it determined that it is not gum tissue?

A. The rubber dam may be applied to the tooth and a ligature passed around the tooth, leaving the polypus within the cavity of decay adhering to the pulp. It likewise bleeds profusely at the slightest touch.

Q. What is the cause of these growths?

A. The constant irritation of the pulp which sometimes, as in these cases, causes a hypertrophied condition.

Q. Does pus as well as blood exude from these growths?

A. Very little pus has been noticed exuding from these formations.

Q. How are they attached?

A. They are attached to the pulp by a constricted neck, and may be moved from side to side without communicating much pain to its connection—the nerve.

Q. How is the absence of pain accounted for when it is touched?

A. As the sarcoma is on the outside, it protects the pulp to which it is attached.

Q. Are these polipi of the same color as gum tissue?

A. Very nearly, yet more of a dark red color, and their character is more fleshy than gum tissue.

Q. How is it proposed to treat such cases?

A. The polypus is snipped off as near as possible to where it joins the pulp with fine curved blade scissors, or with a lancet, and the blood arrested with styptics. The growth is well soaked with carbolic acid—nitric acid may succeed this or the strong cautery of nitrate of silver used. The remains of the pulp may be capped and the remainder of the cavity filled. As such cases will not last long a filling of gutta percha will probably be as good as any material to fill with. It has been advised in cases where the tooth is one of great value and presents a foundation for a harder filling to proceed with it as in other nerve cases—that is, removing the remains of the pulp, and filling the root, or roots and crown.

[TO BE CONTINUED.]

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# REPORT OF THE PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS.

By Theodore F. Chupein, D.D.S., Philadelphia, Pa.

*Dr. Wessels* spoke of the advantages of mixing emery with pumice for the purpose of removing the scratches left by the sandpaper preparatory to polishing rubber plates. By mixing this in the proportion of one-half, a surface may soon be obtained. This surface is still farther made smooth with pumice alone, when the plate is finally polished with whiting.

*Dr. Herbst* corroborated Dr. Wessels, as he had used it. He did not use it in so large a proportion, mixing only one-fourth of emery to three-fourths of pumice. He did not know the grade of the emery but thought 40 grade was coarse enough.

*Dr. Charles Chupein* had used this combination but thought 40 grade would be too coarse. He had found emery of 100 grade quite effective for the purpose and quite coarse enough.

*Dr. W. H. Trueman* would like to call to the attention of the members a metal which had lately been put on the market under the name of "Platanoid." The new metal oxidized readily, and darkened the teeth on which it was used as a backing. It was readily dissolved by nitric acid.

*Dr. Chupein* had used the alloy, but had not noticed that it darkened the teeth on which it was used as a backing, nor that it oxidized readily. Its stiffness suggested to him its adaptability for use as pivots or dowels for crowns.

*Dr. Keyser* said that the best material he had used for dowels, posts, or pivots, was nickel. He obtained this by sawing a strip from a "five-cent piece." This could afterwards be filed round, square or tapering as suited the case in hand. He found it, for stiffness, equal to indo-platmun wire for the same purpose.

*Dr. Wessels* stated that he had used nickel, cut from a "five-cent piece" very satisfactorily for making "nuts" for regulating appliances.

In the item of cleansing and purifying wax, Dr. Trueman stated that after boiling this and removing all foreign matter, as suggested by Dr. Chupein, if a small quantity of sulphuric acid be added to it, the wax not only rendered clean and pure, but made much tougher.

*Dr. Trueman* stated that he thought all alloys were improved by annealing. He secured this by placing the bottle containing the filings or shavings within the hot air chamber of the house heating furnace, where the temperature was about 130° and keeping it there several days; after this treatment it seemed to him that the alloy mixed smoother. He favored "shavings" more than "filings" as he thought a better amalgamation was secured.

*Dr. Keyser* used asbestos wool moistened with water, as an investing material in soldering extensions to plate teeth. The advantage gained was that the workman had not to wait, as he would have to do, if invested with plaster of Paris and sand; but could proceed to solder at once.

*Dr. Trueman* stated that when zinc flowed sluggishly from the ladle, the condition could be entirely overcome by using an infinitesimal part of aluminum in the ladle. For this purpose an alloy was first made by adding *one part of aluminum* to *twenty five parts of zinc.* Of this alloy a very small amount is added to the zinc, say *one part of the alloy to one hundred parts* of zinc, in small quantities at a time.

*Dr. Wessels* was favorably impressed with the action of "Cataphoresis." He had excavated sensitive dentine absolutely without pain, which, without its use, were so painful, as scarcely to allow touching. He accomplished this after the application of the battery for *ten minutes*. He had removed a live nerve painlessly inside of one hour.

*Dr. Bonsall* had succeeded so well with the combined action of chloride and sulphate of zinc, that he had not found a good reason for employing Cataphoresis.

*Dr. Keyser* had found wonderful efficacy in obtunding sensitive dentine in the use of *oil of mustard*.

*Dr. Chupein* relied greatly on dryness. He applied the dam over a number of teeth. If one cavity was too sensitive to work on, he dried this out and applied the chloride or the sulphate of zinc. He had not used these agents combined, but had found the application of the sulphate to cause less pain than the chloride. He let them stay in the painful cavity while he worked on the other cavity. In this way he was able to prepare sensitive cavities with so little discomfort that his patients did not complain.

## OBITUARY NOTICE.

Dr. Wm. Pepper died on the 28th day of July, 1898, at Pleasonton, California.

It is difficult to estimate the loss which this public-spirited, active, kindly-disposed and brilliant scholar has cast on the community. Wherever the happiness of the masses, the intellectual advancement of his fellow beings could be raised, Dr. Pepper was ever ready with his fortune and his energy to attain these, and many other ends.

We recall the dignity with which he presided, as Provost of the University of Pennsylvania, when conferring the degree of doctor of dental surgery at the annual commencement of the department of dentistry of that institution. As each student received the diploma, and filed off the stage, Dr. Pepper would gracefully bow in reponse to the young doctor's salutation, with the oft-repeated: "Salutem doctor," thereby conferring the degree by word of mouth.

In this way, and in many other ways Dr. Pepper entwined himself around the hearts of all who knew him, making him "Le bien aime de tout."—Ed.

## SELECTED ARTICLES.

### NEURECTOMY FOR TIC-DOULOUREUX.

Bernays' "Report of a Surgical Clinic," complimentary to the members of the Mississippi Valley Dental Association, contains the following, in reference to his patient's condition and treatment, before neurectomy for tic-douloureux was decided upon:

"Case V.—The patient, aet. 50, white, female. Family history: Has one sister who suffered from emotional insanity; otherwise the family history is good. Previous health excellent. The present trouble began with a severe neuralgic toothache, localized in the right lower molars. Paroxysms of pain were of daily occurrence, and most severe in the mornings about breakfast time. The pain subsided temporarily whenever the teeth were pressed firmly together or upon any substance held between them, but only to return when the pressure was withdrawn. The presence of anything cold in the mouth immediately produced the most exquisite pain; moderate heat produced a soothing effect. After two months, the pain became continuous, and four molars were extracted without in any way relieving it. On the contrary, the pain increased in severity until October when it ceased entirely for a period of two weeks, and then returned as severely as before. Another tooth was sacrificed, but without relief; the pain became continuous until last June when it again subsided for a period of six weeks. A recurrence then took place together with an involvment of the parts supplied by the second branch of the fifth nerve. Pain has been constant until the operation. She had strenuously avoided the use of narcotics, but during the more active periods of pain, antikamnia in ten grain doses was found to be an efficacious obtunder." After describing the neurectomy, Prof. Bernays says: "Eight weeks have now elapsed since the operation, and no recurrence of the trouble has taken place."

## PAINLESS DENTISTRY.

### Dr. Clyde Payne, San Francisco.

We owe it to our patients to use the means at our hands to make the operations painless. There is no operation in the mouth that cannot be made quite painless. It takes a little more time, but the patient is usually willing to pay for the extra time.

Regarding the formula I use—carbonate of potassium, glycerine cocaine and carbolic acid in a saturated solution—I have had excellent results with it, as have Drs. Younger, Cool, Lewis and others who have used it. It is the next best thing for sensitive dentine to cataphoric medication. Apply the rubber dam, dry out the cavity thoroughly—dry it out with alcohol; place a drop of the obtundent into the cavity and throw a continuous blast of hot air on it, and keep it up for five minutes, when you can excavate quite painlessly.

**The basis of nearly all local anesthetics is cocaine. It is a dangerous**

drug to use if you do not understand its physiological action; but for hypodermic injections for the painless extraction of teeth, I use the following formula, in which the ingredients are so proportioned that I am yet to have an ill-physiological effect from cocaine: Cocaine, 15 grains; glycerine, 5 drams; nitro-glycerine, 1–10 of a grain; sulphates of morphia and atropia, 1 grain; carbolic acid, 3 drops; and distilled water sufficient to make a two ounce mixture. There is sufficient glycerine to localize the cocaine holding it in apposition to the parts a sufficient length of time to complcte the operation, and not very long so that it acts as an irritant and causes a swelling. In patients who have a poor circulation sometimes there is a swelling with this formula, but it will be painless, and will subside as soon as the anesthetic, with which you have infiltrated the tissues, has become absorbed. The nitro-glycerine stimulates the heart just in proportion as the cocaine may depress it. The sulphates of morphia and atropima overcome the after-pain. The carbolic acid keeps the solution.

I will give you an idea of the sterility of this combination. Dr. S. E. Knowles used some that had been standing nine months with a perfect result. The anesthetic figures a 1 1–2 per cent. solution of cocaine.

Many of you are using this formula. I mention it again for the benefit of those who might wish to try it. This is the first time that the formula has been made public property, though I gave it to every one who asked me for it.

Operations of implantation can be made with this formula without pain. Dr. W. J. Younger removed a tumor from the mouth of a patient after I had anesthetized the parts, without pain. The wound healed by first intention.

I had occasion to assist Dr. W. A. Bryant in an operation where surgical means were taken to correct a very pronounced superior protrusion. The four incisors were extracted, four new sockets drilled and the teeth replanted. The operation was painless.

I use it always before adjusting a clamp if the clamp is to impinge on the gum.—*Dental Brief.*

## A CLINIC ON A FUSIBLE ALLOY.

GRANT MOLYNEAUX, D. D. S., Cincinnati, Ohio.

The increased number and large variety of operations performed in the modern dental office, entailing as they do a considerable amount of mechanism, compel the busy practitioner to seek the most rapid method for the execution of his work.

The construction of splints, supports for loose teeth under treatment, regulating and retaining appliances, "bridges," crowns, etc., can only be properly executed under the direct supervision of the attending dentist.

If he be a busy man, both time and patience are taxed to the utmost by the cumbersome and lengthy methods generally employed in the execution of the purely mechanical details.

The methods generally employed are to procure an impression either in modeling compound or plaster of paris, followed by the mixing and pouring of a plaster model, varnishing, waxing, sand-moulding for die, counter-die and swaging.

This requires two or more visits of the patient when one visit should suffice.

Rapidity in dental operations is always sought, but any "new method" claiming such virtues is generally approached with fear and trembling, especially by our older brothers.

To allay that fear, I will state that the subject of this clinic has been known to the dental profession for a quarter of a century, and as possessing many virtues, the greatest of which has been overlooked. In advocating this new (?) rapid method we fully appreciate that old adage, "make haste slowly," for rapid methods are only valuable when they are *accurate and perfectly understood* by the operator.

Woods' metal has been used in dentistry for many years, and is known to contain bismuth, cadmium, tin and lead. The alloy before you contains the same ingredients as Woods' metal, the proportions being changed so as to produce an alloy that may be cast into a *modeling compound* or wet plaster of paris impression and give a *smooth*, *accurate* model or die in metal.

The advantage of being able to cast metal directly with wet plaster or modeling compound can be appreciated by all practitioners of experience, if the model or die be accurate. We feel safe in saying that an alloy composed of five (5) parts of bismuth, three (3) parts of lead, two (2) parts of tin, and two (2) parts of cadmium, properly compounded, will produce, when poured into either of the above named impression materials, a more perfect model than can be obtained by the use of plaster, but a model of this alloy cannot be used in place of plaster in all cases, as in vulcanite or celluloid work, for the fusing point of the metal is about 130°F. It is especially designed for the making of a perfect die and counter-die with the expenditure of not over five minutes' time, and with the very simplest kind of apparatus. By the use of such an alloy the difficulties of sand-molding are overcome and the production of a perfectly adapted plate is the result. To successfully use this or any low-fusing alloy several points must be constantly observed:

1st. Castings are sharpened and nearest perfect when the alloy is poured close to the congealing point.

2d. Overheating causes a loss of time and deterioration of the alloy.

3d. To make a perfect and smooth casting in modeling compound the impression should be first oiled, and then the alloy is cast in a mush-like consistency, when it will fall in a thick, soft mass into the impression, which is quickly jarred on the table, cooled in water and separated. A little practice will enable the operator to produce a perfect model in every instance.

4th. Take a plaster impression directly from the mouth, soak it thoroughly with sperm oil, and pour the alloy at a little higher temperature than for modeling compound and let it stand until cold.

5th. In order to obtain a thick base for the model take a thin copper strip (in lieu of this a strip of heavy writing paper) about ten or twelve inches long and two inches wide, wrap around the impression and hold in place by snapping over it a small rubber band. Fill in spaces between band and impression with soft putty, which will always be ready for use by being kept under water. [A half-pound screw top vaseline jar half filled with soft putty and covered with water will keep quite soft for years.]

6th. To make counter-die, wrap the copper strip around the base of the die and fill all undercuts and unnecessary parts with the putty, paint over the surface with whiting dissolved in water or alcohol and cast the alloy as cold as possible.

7th. Before rendering castings, they should be cleaned of all putty and other dirt.

If, however, the metal becomes contaminated, it can be cleaned by heating until it becomes perfectly fluid, when the impurities can be removed with a piece of blotting paper. One illustration of the use of this alloy may be suggestive of its many valuable applications.

In adapting a gold or platinum base for full dentures where the recession over the tuberosities and anterior ridge is so great as to make sand molding without a core absolutely impossible, make the model or die of fusible alloy by casting into the impression. For such a case always use plaster, as this can be broken off in such a manner as to be restored and a second die cast.

Upon this second the relief or vacuum chamber, made of block tin, can be attached with thick shellac varnish, or the relief can be first trimmed out of the impression.

Use the second die for the first stamping of the plate, making the adaption to the undercut as close as possible with riveting hammer.

Try the plate in the mouth and properly trim and wire if necessary.

Replace on the used die and wrap the plate and die with one covering of cheese-cloth or thin paper, place in the Parker shot-swaging device and swage.

The plate cannot be removed from the die, but by placing the same in hot water the metal will run out of the plate, leaving it unchanged in shape.

It can now be polished, and after transferring the relief from the old die to the unused one, the plate is sprung onto it and swaging with shot and melting the metal out as before will leave the plate with an adaption that cannot be procured by any other method. In taking an impression for metal castings, it should be a little thicker than usual, and any number of dies can be made from the same impression, all of which will be alike.

The compounding of this alloy requires the greatest of care in protecting it from the action of the air during the first melting and in the manner of adding the metals. As it never again approaches the first heat except by carelessness, the metal will remain permanent in composition and working qualities indefinitely.

The necessary expense of this alloy, which at first may seem unreasonable, will be saved in the saving of time in one difficult case.

After two years of constant use of this metal, I can positively state that it will meet all the claims of this clinic.—*Ohio Dental Journal.*

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## PRACTICAL PLACE.

### ALUM FOR PREVENTION OF TARTAR.

Surprises are constantly occurring. We have always thought that alum in any quantity was injurious to teeth. Now comes Dr. C. N. Pierce, who says he has been using a solution of alum to prevent the accumulation of tartar; over a dozen patients have tried it, and he has been surprised at the excellent results. He tells them to take a glass of water with a pinch of alum in it, and rinse the mouth freely once a day. It is harmless, he says, to the teeth, and has kept the gums in good condition, where previously there was a heavy accumulation every month or six weeks.

Dr. Leffman, a chemist, was called on to answer about the injurious effects on the teeth. In the same journal (*International Dental Journal*) he says he does not think alum would produce any corrosion. It is not an active corrosive agent. He should therefore not expect much corrosion from the alum. If the quantity were large, it might have an astringent action on the gums. He feels that the experiment would probably show very little, if any, corrosion of the teeth proper. Alum is not like a free acid. It has the properties of an acid, but simply because there is a want of balance between the alumina and sulphuric acid. It shows the properties of an acid to litmus-paper and to our taste. But there is as much neutralizing material in it as in baking soda. We are apt to think that alum is an acid substance, when in reality it is merely a substance with an acid reaction.

The chemist's answer is a little equivocal.—*American Dental Weekly.*

## USES OF BORAX.

We have reported before that an addition of borax to the starch or flour will enhance the adhesive quality of paste fifty per cent.; borax also has an antiseptic action, and a slight admixture of it will prevent the paste from souring. For aquarelle painting, a varnish soluble in water may be prepared from five parts of shellac and one part borax, which is to be used for binder instead of glue.

With caseine, which is freshly precipitated from milk by the use of acetic acid, a liquid of thickish consistency is obtained by dissolving same in a concentrated borax solution. The substance possesses great gluing qualities, and, when mixed with lime, furnishes very permanent colors

Finally, borax plays an important part in soldering, as it removes the oxide generated by the hot soldering tool from the solder, zinc or hard solder, thus assisting the soldering. In smearing up an iron stove with loam, a much more durable material is obtained by mixing four parts of loam with one part borax.—Condensed from the German *Illustrirte Maler Kalender* for 1898.

# GENERAL INDEX FOR VOL. XII, 1898.

A

PAGE.

All-Plaster Articulating Models vs. Brass Articulators . . . 14
A Right Hand Glove . . . 17
Articulating Teeth . . . 20, 28
Amalgam Question. The . . . 23
A New Cleansing Fluid . . . 26
Anæsthesia. Infiltration . . . 27
A Filling Polisher . . . 25
Administration of Ether for Anæsthesia . . . 30
A Good Soldering Block . . . 41
A Simple Way of Making a Gold Crown for Certain Cases . . . 43
Amalgam . . . 45
A Word of Warning . . . 55
A Useful Flux . . . 60
Artificial Respiration. New Method of . . . 61
Aluminum. To Polish . . . 62
An Electrical Haemostat . . . 62
Anæsthesia. Cocaine . . . 63
A New Local Anæsthetic . . . 64
A New Method of Polishing Vulcanite Plates . . . 64
A New Method of Banding Logan Crowns 64
A Counter Irritant . . . 89
After Pains of Extraction . . . 89, 91, 96
A Substitute for Gold for Dental Plates . . . 91
Aromatic Sulphuric Acid . . . 91
An Efficient Deodorizer . . . 91
A Useful Modelling Compound . . . 94
Aluminized Gutta Percha . . . 96
Aluminum Crowns . . . 159, 160, 106
Aconite . . . 117
Ammonol . . . 118
An Allayer of Pain, An Antiseptic and Local Anæsthetic . . . 121
An Interesting Case . . . 124
A Clinic on Fusible Metal . . . 188
Alum for Preventing Tartar . . . 191
Athletics vs. Fresh Air . . . 125

B

Brass Articulators vs. All-Plaster Articulating Models . . . 14
Base Wax. How to Make . . . 15
Book Notices . . . 25, 88, 109, 110, 155, 156
Bee Sting . . . 62
Banding Logan Crowns. A New Method of . . . 64
Blood Stains . . . 92
Birmingham Dental College . . . 108
Breathe Properly . . . 119
Borax. Uses of . . . 192

C

Crown and Bridge Work. The Construction of . . . 1, 33, 97, 161
Cleansing Fluid. A New . . . 26
Cement Fillings. For the Protection of . . . 27
Carbolic Acid. Danger in . . . 29
Chronic Gastritis . . . 31
Cure for Fetid Breath . . . 32
Chloride of Ethel Spray Haemostat . . . 62
Cleansing Paste for the Hands . . . 63
Castor Oil Externally . . . 63
Cocaine Anæsthesia . . . 63
Cold in the Head. Gelsemium for . . . 63
Conservation of Tooth Tissue in Preparing Cavities . . . 70
Cleaning Clothing . . . 88
Counter Irritant. A . . . 89
Cementing Bands to Crowns . . . 90
Cataphoresis . . . 90
Covering for Slight Wounds . . . 90
Conserving the Pulp. Diagnosis for . . . 94
Character in Walking . . . 95
Crowns. Aluminum . . . 106, 159, 160
Clasp Plates . . . 107
Chicago Dental Society . . . 108
Canabis Indica . . . 116
Corns. Remedy for . . . 128
Contour Amalgam Fillings. Matrices, How to Make for . . . 174

D

PAGE.

Dental Students. Leading Questions and Answers for . . . 8, 46, 148, 178
Dental Alloys and Cements. Making . . . 17
Discoloration of Tooth from Arsenical Preparations . . . 22
Directions for Eucaine Hydrochlorate B. . . . 30
Dam and Matrix. Modelling Compound . . . 61
Dental Inspection of Schools . . . 90
Dental Plates. A Substitute for Gold, for . . . 91
Deodorizer. An Efficient . . . 91
Diagnosis for Conserving the Pulp . . . 94
Danger in Fruit . . . 96
Dental Association. The National . . . 109
Dental Department of the University of Buffalo . . . 109
Discovery of Sal Ammoniac . . . 124
Dental Educators . . . 125
Dirty Burs. Receptacle for . . . 126
Difficult Partial Impressions . . . 127
Danger in Carbolic Acid . . . 29

E

Ether for Anæsthesia. Administration of 30
Eucaine Hydrochlorate B. Directions for 30
External Use of Castor Oil . . . 63
Extraction. After Pains of . . . 89, 91, 96
Ergot . . . 116
Eucaine . . . 116
Eucalyptus Tooth Paste . . . 127

F

For the Protection of Cement Fillings . . . 27
Formaldehyde . . . 30
Fetid Breath. Cure for . . . 32
Flux. A Useful . . . 60
Fowler's Solution as an Obtundent . . . 60
Formalin Cement Root Canal Filling . . . 61
Fistulous Openings to Force Medicaments Through . . . 63
Filling Material. The Choice of a . . . 81
Formalin in Dentistry . . . 92
Formaldehyde in Connection with the Essence of Geranium in Dental Therapeutics . . . 111
Fresh Air vs. Athletics . . . 125
For Sensitive Dentine . . . 125
Fouchard. Peter . . . 129

G

Gastritis. Chronic . . . 31
Gold Crowns. A Simple Way of Making for Certain Cases . . . 43
Gelsemium for Cold in the Head . . . 63
Gutta Percha. Aluminized . . . 96
Gold Solution. How to Make . . . 102

H

How to Purify Wax and Make Base Plate Wax . . . 15
Hydronaphthol in the Treatment of the Dental Pulp, Dead or Alive . . . 57
Haemostat. Chloride of Ethel Spray . . . 62
Haemostatic Mixture . . . 62
How to Make Silver Solution . . . 101
How to Make Gold Solution . . . 102
How to Separate a Vulcanite Flask . . . 108
How One Manicure Reads the Nails . . . 125
How to Take Impression of the Mouth with Undercut Teeth . . . 126

I

Impressions of Modelling Compound . . . 22
Infiltration Anaesthesia . . . 27
Inflammation of the Gums. Massage in . . . 27
Investing Material . . . 29
Ingot Moulds . . . 30
Impression Materials and Taking Impressions . . . 65

# GENERAL INDEX FOR VOL. XII.

## I

PAGE.

Ivy Poisoning. Relief from . . . . . . . 89
Inspection of Schools. Dental . . . . . . 90
Iodide Potass. . . . . . . . . . . . . . . . . 118
Ignorance . . . . . . . . . . . . . . . . . . 127

## L

Leading Questions and Answers for Dental Students . . . . . . . . . . 8, 46, 148, 178
Libly Method. The . . . . . . . . . . . . 23
Laboratory Hints . . . . . . . . . . . . . 27
Liquid Air . . . . . . . . . . . . . . . . 59
Local Anaesthesia. Warm Solution for . 62
Logan Crowns. A New Method of Landing . . . . . . . . . . . . . . 64
Lining for Sensitive Cavities . . . . . . . 91
Lithium . . . . . . . . . . . . . . . . . 118

## M

Making Dental Alloys and Cements . . . 17
Modelling Compound. Impressions of . . 22
Massage in Inflammation of the Gums . . 27
Models and Impressions. To Duplicate . 28
Modelling Compound Dam and Matrix . . 61
Mad Dog Bite . . . . . . . . . . . . . . . 89
Modelling Compound. A Useful . . . . . 94
Metaphysics . . . . . . . . . . . . . . . . 103
Mercury . . . . . . . . . . . . . . . . . . 118
Mixing Alloys . . . . . . . . . . . . . . . 123
Muscles of Expression . . . . . . . . . . 177

## N

Nitrous Oxide Gas . . . . . . . . . . . . . 24
New Method of Artificial Respiration . . . 61
Neurectomy for Tic-Douloureux . . . . . 186

## O

Oxychloride of Zinc Cement . . . . . . . 16
Obituary Notices . . . . . . . . . . . 26, 87, 186
Our Local Societies . . . . . . . . . . . . 38
Obtundents . . . . . . . . . . . . . . . . 45
Odontographic Society . . . . . . . . . . 52
Obtundent. Fowler's Solution as an . . . 60
Observation . . . . . . . . . . . . . . . . 104
Opium . . . . . . . . . . . . . . . . . . . 117

## P

Pulp Canals. Sterilizing Putrescent Contents of . . . . . . . . . . . . . . . . 28
Pyrrhœa. Treatment for . . . . . . . . . 29
Painless Removal of Pulps . . . . . . . . 60
Polish Aluminum. To . . . . . . . . . . . 62
Preparing Cavities. Conservation of Tooth Tissue in . . . . . . . . . . . . . 70
Point of Contact . . . . . . . . . . . . . 85
Pulpitis. Treatment of . . . . . . . . . . 89
Prevention of Tartar . . . . . . . . . . . 90
Passage of False Teeth. Vienna Treatment for Effecting . . . . . . . . . . . 93
Pyrozone. Uses of . . . . . . . . . . . . 112
Papine . . . . . . . . . . . . . . . . . . . 117
Potass. Iodine . . . . . . . . . . . . . . 118
Partial Impressions Difficult . . . . . . . 127
Peter Fauchard . . . . . . . . . . . . . . 129
Painless Dentistry . . . . . . . . . . . . . 187
Prevention of Tartar. Alum for the . . . 191

## R

Rubber. To Harden . . . . . . . . . . . . 27
Report of the Penna. Assn. of Dental Surgeons . . . . . . . . . . . . . 44, 184
Removing Pulps Painlessly . . . . . . . . 60
Root Canal Filling. Formalin Cement . 61
Relief from Ivy Poisoning . . . . . . . . 89
Removal of Devitalized Pulp from Root Canal . . . . . . . . . . . . . . . . . . 89
Root Treatment. Silico Fluoride of Mercury . . . . . . . . . . . . . . . . . . 89
Root Perforation . . . . . . . . . . . . . 94
Rubber Dam. To Apply the . . . . . . . 107
Receptacle for Dirty Burs . . . . . . . . 126
Remedy for Corns . . . . . . . . . . . . . 128

## R

PAGE.

Reminiscences . . . . . . . . . . . . . . . 130
Report of the New Jersey State Dental Society . . . . . . . . . . . . . . . . 144

## S

Sticky Wax. To Make . . . . . . . . . . . 28
Sterilizing Putrid Contents of Pulp Canals 28
Soldering Block. A Good . . . . . . . . . 41
Solid Gold Cusps . . . . . . . . . . . . . 45
Sting. Bee . . . . . . . . . . . . . . . . . 62
Silico-Fluoride of Mercury. Root Treatment . . . . . . . . . . . . . . . . . . 89
Sensitive Cavities. Lining for . . . . . . 91
Separating Model from Impression . . 92, 95
Stains. Blood . . . . . . . . . . . . . . . 92
Silver Solution. How to Make . . . . . . 101
Silver Salts. Their Uses in Dentistry . . 113
Silver Nitrate in Superficial Decay . . . . 122
Sticking Stoppers . . . . . . . . . . . . . 123
Suction Cavities . . . . . . . . . . . . . . 124
Sensitive Dentine . . . . . . . . . . . . . 125
Strop for Burnishers, Spatula, etc. . . . . 126
Shock . . . . . . . . . . . . . . . . . . . 126

## T

The Construction of Crown and Bridge Work . . . . . . . . . . . . 1, 33, 97, 161
Troublesome Cases . . . . . . . . . . . . 12
Tooth Discoloration from Arsenical Preparations . . . . . . . . . . . . . . . . 22
The Libby Method . . . . . . . . . . . . 23
The Amalgam Question . . . . . . . . 23, 109
To Harden Rubber . . . . . . . . . . . . 27
To Keep Solder in Place . . . . . . . . . 27
To Make Sticky Wax . . . . . . . . . . . 28
To Prevent Plaster Adhering to Rubber Plates . . . . . . . . . . . . . . . . . . 28
To Duplicate Models and Impressions . . 28
To Harden Plaster Boil in Paraffine . . . 28
Treatment for Pyorrhœa . . . . . . . . . 29
Tooth Washes . . . . . . . . . . . . . . . 31
To Polish Aluminum . . . . . . . . . . . 62
The Hands. Cleansing Paste for . . . . . 63
To Force Medicaments Through Dead Teeth with Fistulous Openings . . . 63
Taking Impressions and Impression Materials . . . . . . . . . . . . . . . . . . 65
The Digestive Organs . . . . . . . . . . . 75
The Choice of Filling Materials . . . . . 81
Treatment of Pulpitis . . . . . . . . . . . 89
Tartar. Prevention of . . . . . . . . . . . 90
To Prevent Weeping Gums . . . . . . . . 92
To Apply the Rubber Dam . . . . . . . . 107
The National Dental Association . . . . 109
To Control Hemorrhage at Apex of Root after Pulp Removal . . . . . . . . . . 124
Tooth Paste . . . . . . . . . . . . . . . . 127
Trying and Wishing . . . . . . . . . . . . 127
The Folly of Private Interpretation . . . 127
Timid Children . . . . . . . . . . . . . . 157
The Importance of Establishing a Technic as Well as Literary Standard for College Entrance . . . . . . . . . . . . . . 169
Tic-Douloureux. Neurectomy for . . . . 186

## U

Useful Modelling Compound. A . . . . . 94
Uses of Pyrozone . . . . . . . . . . . . . 112
Uses of Silver Salts in Dentistry . . . . 113
Uses of Borax . . . . . . . . . . . . . . . 192

## V

Vulcanite Plates. A New Method of Polishing . . . . . . . . . . . . . . . . . 64
Vienna Treatment in Effecting Passage of False Teeth . . . . . . . . . . . . . 93

## W

Wax. How to Purify . . . . . . . . . . . . 15
Warm Solution for Local Anaesthesia . . 62
Weeping Gums. To Prevent . . . . . . . 92
Walking Erect . . . . . . . . . . . . . . . 110
Wishing and Trying . . . . . . . . . . . . 127

THE
Dental Office and Laboratory.
FOURTH SERIES.
VOL. XIII. PHILADELPHIA, JANUARY, 1899. No. 1.

# REPORT OF THE COMMITTEE ON FOREIGN RELATIONS OF THE NATIONAL ASSOCIATION OF DENTAL FACULTIES.

MADE AT OMAHA, NEBRASKA, AUGUST 29th, 1898.

*To the President and Members of the National Association of Dental Faculties:*

The special committee on recognition of degrees in foreign countries, and the comparative value of foreign degrees in this country, appointed at the last meeting of this Association, begs leave respectfully to report as follows:

The scope of the investigation of the committee has been somewhat changed from that which would appear to be indicated by the announcement in the published proceedings. It should not be forgotten that there are really no foreign degrees in dentistry, the nearest approach to this being the Licentiate in England. America is peculiar in having a distinct and separate diploma for the graduates of distinctly dental colleges. We can not hope for the recognition of this distinction until our course of instruction is fully comprehended in Europe, and the reputability of our degree established. The report of your committee, then, will specially consider the preliminary steps which we believe it proper to take before commencing further agitation. The subject is of the deepest significance, and involves our whole system of education. There can be no mutual recognition until there has been secured some common ground on which the profession of the various countries of Europe and of America can meet. At present the systems are too diverse, and involve too many seeming contradictions to allow any real reciprocity. Yet that is a consummation devoutly to be wished, and certainly we in America should spare no pains in the endeavor to bring it about. Hence the appointment of a committee to take the subject into consideration by the supreme authority in matters educational among us was doubtless a wise movement, and one which in the opinion of your committee should be persistently followed up. Indeed, the committee has received many letters highly approving of the action taken, with the promise of a hearty co-operation on the part of American dentists resident abroad.

That this body may act intelligently, it seems necessary in this report to review, as concisely as is possible with thoroughness, the real situation, with the view of securing a better state of affairs.

It must be remembered that scholastic dental practice, with the separate teaching which has been found necessary, is of quite recent origin. The first distinctive dental school was established in America in 1840, less than sixty years ago. For more than forty years all didactic and class instruction was confined to this country. Within the past twenty years dental schools have been organized in some of the countries of Europe, usually in connection with hospitals, for the purpose of securing clinical instruction and material. There has never been any reciprocity between the schools of the two continents, if we except the recognition temporarily accorded by England to the dental departments of Harvard and Michigan Universities. The conditions obtaining in the two continents too widely vary. The one is long-settled, possessing the real erudition that can only be found in nations that have a past, but imperatively dominated by the traditions and precedents which are the natural outgrowth of heredity. The other has been a new country, with no educational or other institutions hallowed by centuries of growth and progress, and possessing the weight of ancestral influence. In the settlement and development of this country our people encountered obstacles totally unknown to the older states of Europe. Precedent there was none to guide, and tradition there was none to influence. The problems which confronted them were conditions existing, and not theories for consideration. The forces of nature were in one sense our foes, and not our allies. It was necessary first to overturn and reconstruct that which nature had already constructed. The struggle to accomplish this made of us a practical, inventive, ingenious people, who care mainly for ends and little for methods, while Europe respects no practical accomplishment that is secured through irregular, unacknowledged methods.

All these matters are reflected in the status of the dental profession here and abroad. Europe cannot be brought to believe in a practice not founded in a liberal preliminary education, while we are, as a whole, too careless concerning antecedents, so long as anything practical is assured. In Europe, if a man has a university education, he is popularly supposed to be competent to practice any profession—law, medicine, divinity, or any of the specialties—any distinct instruction being required only to make him acquainted with the tools that he must use. The university degree is supposed to include everything lesser, and hence there is no necessity for any other, that comprising all.

We, in America, have instinctively recognized the desirability of a university training by founding many schools without sufficient endowment for their independent support, thus really cheapening the university course. This has been through the endeavor to extend educational facilities to the masses, here again looking toward ends and not means.

The natural consequence of all this to our profession has been that in America to-day are probably found the best skilled operators and the highest development of practical work, while in erudition we are in the rear of several European countries.

It may thus be seen that it is difficult to find a common ground on which the professions of the old and the new worlds can stand in equality. Europe will tolerate nothing that does not bear the stamp of regularity. We are satisfied with anything that accomplishes the end sought.

The curricula of the schools of the two continents materially differ. But that could be overlooked, or they might be harmonized. The essential variation lies in the methods, or way through which admission within the ranks of the profession is secured. The old countries jealously guard the doors of entrance We throw them wide, or, at the best, erect a barrier that is too easily overleaped. Europe declares that the learned professions must be reserved for the learned classes, and that any who enter must come through the door of a liberal education. We urge that the only sufficient qualification is fitness and practical knowledge. Europe will never come to our standpoint. Can we, or should we, attempt to reach hers? In the process of time this may undoubtedly be brought about. Already in America we see the effect of a comparatively low standard of requirements in the overcrowding of the professional ranks so that they are losing their distinctive respectability and status, and with that their influence for good is circumscribed. Should this acceptation of the professional tone continue for any length of time, there will be no distinction between the professions and trade. Indeed, we find to-day many who contend that no line of demarcation should be drawn.

Colleges of law, medicine, and divinity, with their specialties of dentistry, pharmacy, etc., are so multiplying that the consequence must eventually be self-destruction, and the annihilation of all professional sentiment. A limit must be placed on the number of schools, and this can only be done by raising the professional standard to a point that will shut out unworthy and unqualified colleges and their students. When this is done, and our preliminary educational standard is sufficiently advanced, with our practical methods and operative skill we shall be prepared to force the profession of Europe to come to our standard, if we are in advance of them, while if they are ahead of us we will be equally bound to reach their level. Even as it is, we are fast approaching each other, they growing more practical and we more erudite. To hasten the desirable end, in the opinion of your committee, this Association should endeavor to secure the co-operation of our confreres of the different countries by some official reciprocity, and we believe that the best method to accomplish this would be through the appointment of a standing committee on foreign relations, whose duty it shall be to make us better acquainted with European educational methods and curricula, and to inform them of the advantages of ours. This might smooth many of the asperities and remove many of the prejudices which work to the detriment of both at the present time.

The second matter referred to this committee involves our relations with our American confreres living and practicing abroad. This is closely allied to the subject already considered. American dentists practicing in Europe have bitterly complained of the granting of the peculiar American degree to those who are, in foreign countries, considered unqualified. There is no questioning the fact that this has been done in the past. The time once was when foreigners flocked to our shores to complete their dental education by an American course of study, and by the securing of an American degree. This was materially checked by irresponsible institutions which conferred their honors too indiscriminately. The American degree was fast falling into such disrepute that it became necessary to do something, and accordingly this national organization of teachers was formed. I need not enlarge upon its great accomplishments. But, unfortunately, it was not conceived soon enough. Cause for reproach had already been given, and Europe has not hesitated to take advantage of it to her own benefit and in her own interests, and hence the D. D. S. does not now receive the consideration to which of right it is entitled, nor has sufficient credit been accorded to the work of this Association. It takes a long time to live down the bad reputation that may be gained in a day.

Two things are charged by American dentists practicing in Europe:

First; that students from the old countries are received by our schools and given advanced standing on the presentation of certificates in foreign tongues which are really worthy no consideration whatever.

Second; that diplomas are practically sold by American institutions, and degrees conferred *in absentia.*

There is, unfortunately, no disputing the fact that our confreres abroad have sometimes had cause for complaint that the value of their diplomas has been depreciated, and that they have not been sufficiently protected by the schools granting them. Even since the organization of this association of colleges, its rules governing the admission of students have been violated on different occasions, through ignorance of the value of some of the certificates which the regulations have made necessary for advanced standing. It is also more than probable that worthless, and even fraudulent certificates, have sometimes been used as pretexts for giving advanced standing in certain American colleges, when their real character should have been well known by the authorities. A foreigner who desires an American degree, and who occupies but a low social position at home, procures a certificate from some unqualified source, perhaps under false representations. It is written in a foreign tongue and sealed with some pretentious seal, possibly that of an emigration or other bureau. This he presents to the American college, assuring the authorities that it represents a definite course of dental study. The Dean is perhaps unable or indisposed to have it verified, and it is accepted, the applicant under it is admitted to the senior course and graduated at the end of a single term. Thus after an absence of but a few months the student, perhaps a servant or a barber's apprentice who had become possessed of a little money, returns to his native land and flourishes in the faces of his former associates a diploma that should be the distinguishing characteristic of an educated man, and claims to be the confrere of those who have honestly earned a certificate of fitness from an American school, and upon whose diploma this unmerited scandal and disgrace have thus been brought.

It is possible that the institution thus offending may have been nothing more than careless. It would take weeks to verify the certificate presented, and then it would be too late for entrance. There are no means at hand by which the value of the document can be ascertained, and so the applicant is given the benefit of the doubt and admitted to advanced standing.

Formal complaint was last year made by American dentists in Switzerland in the case of a man, who was admitted to the Senior class of a college having membership in this body. He had been permitted to join upon the presentation of a foreign certificate. Culpable negligence seemed to have been exercised, and had it not been for the energetic protest of our confreres abroad the student would have been graduated at the end of a few months. Upon the presentation of the case the college reduced him to the Freshman class, and he must wait for his diploma. It is further charged that he was matriculated when not in this country, the date of the closing of the time for registration having expired before his arrival in America. Such cases as this should be closely investigated, that the offending college may be punished if guilty, or exonerated if innocent.

It has appeared impossible in many instances to determine the character of the certificates presented. The foreign school, or pretended school, is unknown here. We have no list of such, and great injustice might be done to applicants if the document is refused, provided it be genuine and sufficient. But it is quite proper for every college to insist upon the endorsement of some known authority. If, as it now is, the authorities are conscientious in the matter and ask for a verification of the document presented, the prospective student perhaps brings a countryman who is suborned to give a false interpretation ot it. Or he goes to a rival school, representing that the first to which he applied, and which calls for the additional testimony, had accepted him, but that he had found the college to be inferior to its neighbor, and so he wishes to transfer his matriculation to a better one. That appeals to more than one perverted sense, and he is accepted on his mere assertion, skillfully made, that the document had been approved by the other institution, and is given advanced standing.

As for the determination of preliminary qualifications, that is a yet more difficult affair. The systems of general education in different countries are so diverse that it is almost an impossibility to decide what may be accepted as the equivalent for the standard of the National Association of Dental Faculties. And so the reception of students from abroad is a matter in which the most conscientious Dean may be at fault.

This condition of affairs has long existed. It forms the basis for many bitter complaints on the part of both foreign and American dentists practicing abroad. It very loudly calls for reform, and to your committee it seems that the good name and reputation of this Association is concerned, and that we are in honor bound to seek some remedy.

The communications from abroad that have been referred to this committee suggest that a board of European dentists should be appointed by this body, who shall take cognizance of such cases, and whose endorsement of the status of a proposed student shall be necessary for his matriculation in any recognized college. To give to such a foreign and irresponsible board plenary powers in the acceptance of applicants for matriculation from aboard, is of course quite impossible. We have no legal or moral right to delegate the authority that has been by law vested in the responsible faculties of our colleges. In some of the states the determination of the qualifications is vested in state authorities, and they could not and would not delegate it to any board whatever. In the State of New York the college officers have nothing whatever to do with the determination of the preliminary qualifications of applicants. They must obtain from the State Regents a dental student's certificate before they can be accepted.

But your committee can see no objection to the naming of an advisory board, whose endorsement of any paper and whose certificate of educational and moral status may be considered sufficient, and it therefore recommends that not more than three qualified persons, resident in each of the principal countries of Europe, be appointed as an Advisory Board, to whom students from abroad may present their certificates of qualification and moral character for endorsement, or to whom the papers of students from abroad concerning which there is doubt or uncertainty, may be referred for authentication and approval. Your committee was advised that this matter would be brought before the American Dental Society of Europe, at its meeting in London, August 1st, and that the chairman would be apprised of any action there taken.*

The second cause of complaint that has been urged before your committee is that degrees from institutions with high sounding titles and names, and which are perhaps endorsed by state officers as having legal status, practically sell their diplomas abroad. This complaint is also one of long standing, and your committee believes that it is well founded. The condition is one for which, however, this Association is not responsible. Yet it seriously reflects upon American educational institutions, and is a source of scandal and opprobrium which can not be ignored by it. In foreign countries the embarrassments of the situation are not comprehended. Under all the European Governments it is possible to enact a general law that shall be effectual. We have nearly fifty separate states, each autonomous so far as its domestic affairs are concerned, and all educational matters belong in that category. Hence, one state may enact a law under which it is possible to incorporate an institution essentially fraudulent in its character, and the other states are powerless to prevent or correct the evil.

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*Since this report was presented and adopted the chairman of the Committee has received an abstract of the proceedings, in which was recommended the very action taken by the National Association of Dental Faculties at its late annual meeting.

The State of Illinois is a glaring example of this kind of vicious legislation. and nearly or quite all the fraudulent colleges are now located in the City of Chicago, to the great reproach of the state and the profession of dentistry within its borders. That city contains some of the very best of our professional educational institutions, and at the same time the most villainous impostures conceivable. Dentistry in Chicago can boast of as high-toned and eminent practitioners as are found anywhere in the world, and it is disgraced by some who appear to acknowledge none of the usually accepted professional obligations, while using the professional name to further their own illegitimate ends. Unfortunately it is sometimes hard for the uninitiated to tell them apart, for some of the latter have held responsible professional positions, and use that seeming endorsement in the pursuit of their illicit business.

Men unacquainted with professional educational affairs, who know not the wiles of designing tricksters who would take advantage of an innocent law to further their own selfish purposes, are not the best judges of what is proper legislation for the professions. In an unsuspecting moment, and without sufficient consideration, there was placed upon the Illinois statute books an enactment which, while assuming to further business interests, and honestly intended for their benefit, allows the incorporation under the law of associations that may carry on a fraudulent diploma business. So loosely or so nefariously drawn was the law, that for the merely nominal fee of registration, amounting to less than five dollars, totally unqualified men may be permitted to issue diplomas of qualification in the different professions. This seems a monstrous state of affairs, but it has been suffered to exist for years. The citizens of other states are powerless, for Illnois is supreme within her own jurisdiction, and she continues to protect her criminals in their villainy. The task of securing the repeal of this vicious law is too great for the courage of its reputable men, for ignorance and vice have struck hands in its maintenance. Even the excellent and influential Illinois State Dental Society has looked upon this condition with seeming indifference. As a consequence of the continuance of this demoralizing law, a considerable number of practitioners of Chicago carry in their pockets, or exhibit on their walls, college charters conferring upon them the power to issue diplomas in dentistry. A number of advertising offices are legally conducted under such names as "The Illinois Academy of Medicine and Dentistry"; "The College of Painless Dentistry"; "The Union College of Dentistry," etc., etc., and *miribile dictu*, the certificates of the Secretary of State, under the great seal of the State of Illinois, can be obtained, certifying to their entire legal repectability and status. It seems to your committee that the decent part of the profession of this grand state should begin an agitation for the repeal of this vicious law. It is earnestly to be hoped that as soon as the professional men of the state are aroused from their lethargy and made to comprehend the enormity of the condition, they will present the matter before the legislature in its proper light, and the disgraceful law will be so amended that it will not apply to educational institutions, and the charters already issued under it will be very promptly cancelled.

Some of the so-called dental colleges have no other existence than this state incorporation. They are owned and run by one man, and he perhaps sails under a false name. Of course, if they give no instruction whatever, and yet confer degrees, they are amenable to the law against fraud. But their diplomas are not offered at all in this country, being only advertised abroad. They know very well that if they attempt to ply their trade at home they will speedily be brought to grief, and so they permit no proofs of their work to come to light in America. There is no indication of their business at their published address, and any letters sent to them from this country are carefully left unanswered. Their work is done through European agents. We cannot locate them, and there are no proofs to be obtained in this country. Our confreres abroad complain bitterly of these swindlers, but they do not comprehend the situation, and when we ask them to obtain the proofs of their villainy, they reply that the miserable affairs are under our immediate notice, and we should get the testimony here.

Sometimes our professional journals, and some of our prominent men, and even professional organizations instituted for the purpose of regulating dental practice here, unwittingly further the objects of these men by falsely charging that respectable schools are practically engaged in the same business of granting irregular degrees, and thus they efface the line of distinction that the reputable colleges have been striving to set up. It is a singular fact that nearly or quite every application which approved colleges receive for irregular degrees comes from Europe, and because of these miserable villifications of respectable schools by American dentists acting with more zeal than discretion and more fervor than knowledge, there is not an American college that is free from these insulting applications.

This is the condition that confronts us in America. The Association has done what it could, and advanced as fast as it could. It has been embarrassed by the lack of co-operation, and even by the active opposition of those to whom it had a right to look for help. It has been denounced because it has not taken the radical steps demanded by men who have little comprehension of the difficulties to be met, and who do not understand that the tone of the colleges, and the profession as a whole, can only be advanced by a movement that is made as a whole. At the most critical moment, the ground that had been gained has been lost through the absolute refusal of some of the colleges to vote to sustain the most moderate requirements, and it may almost be a matter for astonishment that so much has been accomplished. This Association has sharply drawn the line between the reputable and the disreputable schools, and despite the fact that over-zealous and unwise men have been industriously engaged in effacing it, and confusing the good with the bad by claiming that all have the same character, in this country the distinction is well known. It should be, and, if these ill-advised strictures are abandoned, it will soon be as well comprehended abroad. All that is necessary is to scan the list of the members of the National Association of Dental Faculties, and if the name of an institution granting a diploma is not found in it, that document is unacknowledged by this Association. If any college that has a membership in this Association grants a degree or accepts a student irregularly, the faith and honor of every other member is pledged to inflict the most condign punishment upon presentation of the proofs.

But it has been charged that violations of the rules have been committed by members without subsequent punishment. There appears to be an impression that it is the duty of the Association to discipline a college upon mere rumors and to inflict punishment without proofs. This would be the rankest injustice. There has never yet been definite charges made against a college by any responsible party, with accompanying proofs or positive information where evidence could be found, without the most thorough investigation of the case. It has been charged before your committee that the Stauber instance was such an one. But in that case the implicated college corrected the error of its own volition. The remedy for infraction of our regulations thus rests in the hands of every respectable member of our profession, for so carefully has this Association guarded this point that it has appointed a committee with plenary powers for the express purpose of investigating charges of irregularity brought between the sessions, thus offering swift as well as exact justice.

As to the irregular colleges, your committee considers it the imperative duty of this body to employ every possible means for their exposure and suppression. We believe that it should protect the good name of American dentistry and American educational institutions. In this faith your committee, through its chairman, authorized the expenditure of a reasonable amount of money in the prosecution of investigations of unrecognized and irregular schools, and secured the co operation of a thoroughly competent man for this work. As a consequence, considerable progress has been made in the unearthing of some of them. But it will probably take years of persistent effort to accomplish all that is desirable. We have received the most encouraging letters from our confreres in Europe, and have been materially aided by some of them. We have been assured that if such work is continued it must result in the higher appreciation of this Association in Europe, and in the perceptible raising of the estimation in which our degree is there held. Hence, we feel warranted in urging upon you increased zeal in the prosecution of the work already commenced. * * * * * * * *

In view of all the considerations that have been presented in this report, your committee recommends the adoption of the following resolutions:

FIRST:—

*Resolved*, That a Standing Committee of five be appointed each year by the President of this Association, to be called the Committee on Foreign Relations, whose duty it shall be to report each year upon the relative status of dentistry in America and Europe, and to suggest any measures that, in the opinion of its members, will promote the welfare of our common profession, and the usefulness of the distinctive American dental degree.

SECOND :—

*Resolved*, That the Committee on Foreign Relations be instructed to use its utmost diligence in ferreting out fraudulent or irregular colleges, and the granting of degrees irregularly by recognized colleges, should this be done, and to leave undone nothing within their power to bring to justice institutions granting irregular degrees, or degrees irregularly. To this end this Association authorizes the Committee to expend any reasonable sum of money, which, if necessary, shall be raised by some fair assessment of the Colleges of this Association.

THIRD :—

*Resolved*, That an Advisory Board, to consist of not more than three qualified persons from each of the following named countries of Europe be appointed by this Association, to the member or members of which the papers of any foreign applicant for matriculation in any American Dental College shall be referred for verification or endorsement, it being understood that such papers shall be referred to the member or members of the Board appointed for the country of which the applicant is or has last been a resident. The countries to be represented shall be—1, Great Britain; 2, Holland and Belgium; 3, Denmark, Norway and Sweden: 4, Russia: 5, Germany: 6, Austria and Hungary: 7, Italy and Greece; 8, France; 9, Spain and Portugal; 10, Switzerland and Turkey.

W. C. BARRETT,
S. H. GUILFORD,
D. J. MCMILLAN, *Committee.*
F. D. WEISSE,
A. H. FULLER.

The resolutions were unanimously adopted and committee continued as "The Standing Committee on Foreign Relations," J. D. Paterson being appointed in place of D. J. McMillan, elected President of the Association.

The Committee was authorized to appoint the Foreign Advisory Board.

It earnestly invites the co-operation of American dentists at home and abroad. Letters should be addressed to W. C. Barrett, Chairman, 208 Franklin St., Buffalo, N. Y., U. S. A.

## FUSIBLE ALLOY.

(CAUTION.)

A formula has appeared in one of our exchanges—The Dental Digest—which we have made up. We give the results we have obtained for the benefit of our readers:

FUSIBLE ALLOY.—The following metal will melt when thrown into boiling water. It has a consistency equal to silver and can be used with satisfactory results in crown and bridge work, since it can be poured into impressions taken from modeling compound: Bismuth, five parts; lead, three parts, and zinc, two parts.—*Dental Digest.*

Since fusible alloy enters so considerably now into the manipulations of the Dental Laboratory, and as the above formula indicated the employment of metals comparatively cheap, with the exception of bismuth; and even this being used in smaller proportion, we made up a small quantity to try, in order to ascertain if it sustains its claims and would be any cheaper.

First of all it will not melt in boiling water, indicating that the fusing point is greater than 212° F.

It is not cheaper, since at each successive melting, it makes *considerable dross*, so that after, perhaps, six meltings more than one half of the alloy would be wasted or lost by dross.

When poured into a plaster impression it splutters, because of the generation of steam from the moisture in the plaster.

So much for its faults. On the other hand it makes a smooth, sharp die, and on hammering, it seems tough and able to stand the blows of the hammer in swaging.

For the swaging of gold plates by the "shot swager" we are inclined to believe it might be found serviceable. For this purpose the plaster impression could be dried out and the metal poured into it without spluttering. It will remain with the operator to determine if a fusible alloy, as offered by the above formula, be made up and kept for this purpose *alone*, and taking into consideration the loss by dross, would be any cheaper in the long run, than the employment of the more expensive formulas where little loss, by dross, is sustained.

THEODORE F. CHUPEIN.

## FUSIBLE METAL.

The excellent article which we republished from one of our own exchanges by Professor Grant Molyneux, entitled "A Clinic on

Fusible Alloy" is still further eliminated by our correspondence with him.

The alloy is composed of

| | | |
|---|---|---|
| Lead | 3 | parts |
| Cadmium | 2 | " |
| Tin | 2 | " |
| Bismuth | 5 | " |

These metals are melted in the order specified in the formula and in accordance with the following directions :

An iron ladle is used, and placed over a slow fire until the three parts of lead are melted. When this metal becomes fluid a small piece of bees wax about the size of a marble is put into the ladle. The flame of the Bunsen burner should be lowered at this point in order to prevent the wax from igniting. The two parts of cadmium, and two parts of tin are now added, and the flame lowered still more, so as to have only a gentle heat. When the cadmium and tin are melted with the lead, the five parts of bismuth are added, only that this is done by adding the bismuth in small quantities at a time. When complete fusion of all the metals has been accomplished, remove the ladle from the fire and stir gently with a pine stick. The positions of the metals in the alloy can now be fixed by pouring into a wooden bucket half filled with clear water, with a drop of about two feet. Recover the granulated metal, replace in the ladle again, a small quantity at a time, using a gentle heat to effect a second fusion.

When this alloy has been subjected to this second fusion, by permitting it to remain fused a little while, it can be readily cast into ingots of any convenient size for use.

The alloy will remain permanent indefinitely, with little dross occuring, if not allowed to become over-heated.

The method which will yield the best result, and obtain a fine, sharp, smooth die, is to use only enough heat to melt about *one half or two thirds of the ingot,* permitting the heat which has accomplished this fusion, to melt the remainder of the ingot. In other words, to pour the alloy into the impression, in a semi-fluid or mushy condition. If the impression be perfect and sharp, the die will be the same, but if the metal be poured *too hot*, granulations will appear on the surface of the die.

Such has been, also, our experience in the use of fusible alloy, although not compounded in the same proportions as directed by Prof. Molyneaux.—ED.

[THIRTY-SIXTH PAPER.]

# LEADING QUESTIONS AND ANSWERS FOR DENTAL STUDENTS.

By Theodore F. Chupein, D. D. S., Philadelphia, Pa.

## The Peridental Membrane.

Q. What is the peridental membrane?

A. It is a thin skin or membrane, covering the roots of teeth somewhat similar to the periosteum, which covers the bones.

Q. In what does it differ from periosteum?

A. There is an almost complete absence of cartilage in the peridental membrane, and its construction is more fibrous; the fibers running downwards from the apex of the root towards the crown of the tooth.

Q. Are the functions of the peridental membrane the same as the periosteum?

A. The functions are different.

Q. Is the peridental dental membrane the only tissue which separates the root of the tooth from the alveolus?

A. No. Besides the peridental membrane which covers the root of the tooth, the alveolus is also lined with periosteum.

Q. What do you mean by alveolus?

A. The word is derived from the Latin language, signifying a depression, or hole, or cavity.

Q. Does the root of the tooth exactly fit into this alveolus or cavity?

A. The fit is nearly exact; but there is a larger space between the walls at the end of the root.

Q. Has this point been designated by any name?

A. Yes, it is termed the *apical space*, because it is the space in the alveolus near the apex of the root.

Q. You stated that the fibers of the peridental membrane ran downwards towards the crown of the tooth; is this the case from the very apex of the root?

A. No. In the apical space the fibers of this membrane shoot out in various directions, or radiate, like the ribs of a fan, from the apex towards the alveolus.

Q. What seems to be the offices of the peridental membrane?

A. It serves as a pad or cushion to protect the tooth against a sudden blow or jar, as in the biting of hard substances; also, the peridental membrane being liberally supplied with blood, the supposition is that when the tooth has lost its pulp by caries or other causes, a blood supply is kept up in the cementum, through the peridental membrane, whereby the tooth can be retained and still be made useful?

Q. What do you understand by caries?

A. It is a chemical decomposition of the earthy constituents of the teeth?

Q. Is a tooth immovably fixed in its alveolus?

A. The tooth is not immovable in its socket. There is a slight movement in all directions.

Q. But the teeth are said to articulate in their sockets?

A. There is a sort of articulation, called synarthrodial articulation, in which bones are immovably bound together, having no synovial centers. This kind of articulation is noticed when processes of bone are interlocked, or when a thin plate of bone enters the cleft of another bone or in the teeth and conic process of bone enters a socket. (Sometimes called Gemphesis articulation.)

Q. What do you mean by synovial cavities?

A. They are small capsules from which exude a fluid for the purpose of lubricating movable joints. They are not found in the articulations such as we have noted, since these joints, being almost immovable, require no lubrication.

Q. Is anything else noticed about the fibers of the peridental membrane?

A. When this membrane approaches the borders of the alveolus, above the neck of the tooth, these fibers diverge and are lost or assume a thick tough mass or membrane passing from the peridental membrane into the periosteum which lines the socket and covers also the outer part of the bone.

Q. Has this collection of fibers, at this point, any name?

A. It has been called the *dental ligament*, and at one time it was thought that if this ligament was severed by the lancet, the tooth could be extracted with much greater facility.

Q. How are the peridental membrane and the pulp of the tooth supplied with blood?

A. The supply is afforded from a single twig of the arterial system. In the apical space the twig divides, one branch of this twig entering the pulp through the apical foramen of the root while others enter the peridental membrane, dividing innumerably and passing towards the crown of the tooth. These minute branches permeate the entire substance of this membrane, shooting out and anasthmosing freely with arteries of the alveolus, and supplying the gums with blood. This anasthmoses is also noticed at the gum margin, where it forms a network of blood vessels called the *gingival plexus.* By this arrangement the peridental membrane may be supplied with blood either from the *apical space* or from the *gingival plexus.*

Q. What becomes of the blood vessels in the apical space when the tooth takes on alveolar abscess.

A. These vessels are often completely destroyed.

Q. If they be destroyed why should not the tooth be thrown off as a useless body?

A. The supply of blood to the peridental membrane being carried on through the gingival plexus, the nutrition is maintained so that the membrane does not feel the lack of blood-supply from the apical space.

Q. What about the nerve supply of the peridental membrane?

A. The nerve supply follows about the same course as the blood supply. When the nerves are destroyed, as they are in cases of alveolar abscess, the sensitiveness is not diminished at the gum margin.

Q. Is the peridental membrane liberally supplied with nerves?

A. It would seem so since it may be regarded as the organ of touch to the tooth. While the enamel is devoid of sensibility like the finger or toe nail—the slightest touch on the tooth is felt through the peridental membrane. While in health the pulp of the tooth conveys painful impressions, but when the tooth is touched, be the touch ever so slight, the impression is conveyed through the peridental membrane. This sensibility cannot be conveyed to the brain through the pulp, since this is encased within the tooth, but even when food, the tongue, or even liquids touch the tooth, sensation is felt, hence the sensation must be conveyed to the brain by the nerves of sensation distributed through the peridental membrane. The peridental membrane is therefore liberally supplied with blood and nerves from two sources, so that when the supply is cut off from one source, it receives a supply from the other. When, therefore, the blood vessels and nerves which supply the peridental membrane from the apical space are cut off by disease, nourishment is derived from the gingival plexus and the tooth, though diseased, is preserved in comfort and usefulness for many years.

## DISEASES OF THE PERIDENTAL MEMBRANE.

Q. What is to be considered by the student in his study of the pathology of the peridental membrane?

A. That this membrane is subject to several varieties of disease.

Q. What is pathology?

A. The science which has for its object the knowledge of disease.

Q. To what diseases is the peridental membrane subject?

A. *Inflammation from injuries*, such as blows, falls, violence in regulating, etc. *Absorption of the roots* after transplantations, etc. *Pericimentitis* or inflammation of the membrane having the seat in the apical space. *Alveolar abscess,* which follows the death of the pulp of the tooth. *Gingivitis*, an inflammation at the gum border, being the result of salivation from mercury, iodide of potassium, etc. *Calcic inflammation*, the result of a deposit of salivary calculus at the necks of the teeth. *Phagadenic pericimentitis*, an infectious inflammation beginning at the gingival margins and destroying the peridental membrane as well as the alveolar walls.

Q What do you consider is the most painful condition to which the teeth are subject?

A. The inflammation of the peridental membrane with subsequent alveolar abscess.

Q. Where does this inflammation begin when alveolar abscess follows?

A. Always in the apical space, near the foramen of the root oı the affected tooth.

Q. Is it not found elsewhere sometimes?

A. In cases where alveolar abscess supervenes from blows, falls, or injuries resulting from violence of any kind, the abscess is found on the side of the root.

Q. Is an abscess of this kind differently designated?

A. Such abscesses are usually termed "Traumatic abscesses."

Q. What is the cause of an alveolar abscess?

A. An alveolar abscess is caused from the death of the dental pulp; the death of the pulp inducing an inflammation and suppuration to be set up in the peridental membrane of the apical space.

Q. Why should such an abscess be more painful than an abscess in other parts, as, for instance, "a felon" on the finger?

A. For this reason: A felon being a form of abscess beneath the periosteum, the pus burrows its way to the surface through soft tissue, while with an alveolar abscess the diseased tissues being encased or surrounded by the hard, bony walls of the alveolus on one side, and the still harder tissues of the root of the tooth on the other, prevent any expansion of affected membranes while the suppuration endeavors to find an exit, burrowing its way *through the bone* and hence causing intolerable pain.

Q. Does an alveolar abscess immediately follow the death of the pulp?

A. Not always. Sometimes inflammation and suppuration will begin *before* the pulp is entirely dead; ordinarily, however, these only occur *after* its death. Again, the putrescence of the pulp gives rise to the production of poisonous material, which permeates to and affects the peridental membrane escaping, to affect this, through the denital foramen. We notice, in some cases, that though this may be brought about. pain only to a slight discomfort follows; then, again, the formation of an abscess may be delayed for several weeks—at other times an abscess never forms. But should the root canal of such tooth be thoroughly disinfected and treated, the treatment, however carefully done, is apt to produce pain of a serious character.

Q. What frequently brings about this pain after root treatment?

A. The protrusion of root fillings beyond the apical foramen frequently defeats the most careful and thorough antiseptic treatment of the root canal.

Q. What are the symptoms of acute inflammation of the peridental membrane?

A. The symptoms vary considerably in different cases, though they are of the same character, only differing in intensity of suffering.

Q. How is the pain usually indicated?

A. By a dull pain, which may sometimes be located to the tooth affected, but which sometimes proceeds from a tooth remote from the one tooth whence the pain seems to proceed. When the location is unmistakably indicated, relief is, at first, obtained by bringing pressure, with the opposing teeth, on the afflicted tooth; but after the inflammation has proceeded this pressure cannot be borne, and as the peridental membrane swells and increases in thickness, the tooth is slightly forced out of its socket, causing it to touch the antagonizing teeth before the others, when the pain of this antagonism is almost unbearable and of the most severe character, causing the most intense suffering.

Q. Do the surrounding parts give any other indications?

A. The mucous membrane over the afflicted tooth gives all the indications of inflammation. It assumes a deeper red color than the gum over teeth a little removed from it; and if the fingers be brought near the locality pain is experienced. As the case progresses the congestion becomes more marked giving to the gum a deep red or purplish color. This excess of blood to the part causes a throbbing, which each pulsation of the heart intensifies the suffering.

Q. Is it only a congestion of blood to the parts which causes this pain?

A. The excess of blood has no doubt much to do with the pain, but in addition to this pus is formed in the apical space which seeks an outlet.

Q. Is the pus formed in the apical space immediately on the commencement of pain?

A. Pus is formed very quickly sometimes, as quickly as twenty-four hours after the first uneasiness is experienced, yet the formation of pus may be delayed for several days. When pus begins to form the case is no longer one of inflammation of the peridental membrane, but becomes a case of alveolar abcess.

Q. What is pus?

A. It is the cream-colored exudation, the result of suppuration. It may be defined as contaminated white blood corpuscles. It is opaque, sometimes inodorous, sometimes very fetid. At times pus is very irritating. When of this character the tissues will not tolerate it. Such pus is offensive in odor. At other times pus is inodorous. In this condition it is not irritating, and is termed healthy or laudable pus. When an abcess forces its contents and forms a little vesicle on the gum, which the patient disperses by pricking it with a needle or toothpick, the pus from such an abcess is laudable, healthy and inodorous, and cases of this kind have been known to produce no discomfort for years, and only indicate their existence by the periodical filling up of this little vesicle or external fistula. Pus is clinically thought to be due to the presence of micro-organisms. There is a pus called "cheesy pus" which exudes from an external fistula when a tooth is being treated for the cure of alveolar abcess in the form of flakes or granules like curds. At other times pus partakes of a thin watery consistency with little or no odor, but acrid, and with none of the characteristics of regular pus.

[TO BE CONTINUED.]

## CRUDE SILVER SALTS.

Lactate of silver immediately destroys all bacterial life in putrescent pulps, and puts the canals of dead teeth into perfectly antiseptic condition. I use it in canals in powder; for injections, in solution.—CHAS. A. NASH, *Items of Interest.*

## BOOK NOTICES.

A Dictionary of Dental Science and such words and phrases of the collateral sciences as pertain to the art and practice of dentistry. By Chapin A. Harris, M. D., D. D. S , Late Professor of the Principles of Dental Surgery in the Baltimore College; Member of the American Medical Association; Author of the "Principles and Practice of Dental Surgery," etc. Sixth edition, carefully revised and enlarged by Ferdinand I. L. Gorgas, M. D., D. D. S. Author of "Dental Medicine," Editor of Harris' "Principles and Practice of Dentistry," Professor of Principles of Dental Science, Oral Surgery, and Prosthetic Dentistry in the University of Maryland. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut Street. 1898.

The sixth edition of this valuable work is before us for review, bearing marked improvement in its get-up. We notice an increase in the size of the volume, both as to the number of pages as well as to its width and thickness, enabling the author to obtain considerable more space without making the book unnecessarily unwieldy. The typography is clear and distinct. The paper unexceptionable.

In this age of reference books, when the combined efforts of literati, scientific men, biblical scholars, historians, chemists, mechanists, et hoc genus omne, combine to add to the world's information, by giving what they possess to the general stock of knowledge, it is pleasant and gratifying to see our profession no laggard in this general contribution. Dentistry has had an "up-hill" and "hard road" to travel, and has forced recognition, not by subserviency, but by a fair, quiet, honest, and dignified effort.

We have only words of commendation for the work of Professor Gorgas and his co-laborers, and while we have noticed some omissions, these are not important. It has already passed to the sixth edition and has been entirely rewritten. It is published at $5.00 in cloth binding, or $6.00 in leather.—Ed.

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A Pocket Medical Dictionary, giving the pronunciation and definition of the principal words used in medicine and the collateral sciences, including very complete tables of the Arteries, Muscles, Nerves, Bacteria, Bacilli, Micrococci, Sporilli, and thermometric scales, and a dose-list of drugs and their preparations, in both the English and Metric systems of weights and measures. By

George M. Gould, A. M., M. D., author of "The Illustrated Medical Dictionary," "The Students' Medical Dictionary;" editor of "The Philadelphia Medical Journal;" President, 1893, 1894, American Academy of Medicine. A new edition, entirely rewritten and enlarged, including over 21,000 words. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut Street. 1898.

The little book here noticed appeals to the student, practitioner and scientist. With the best memory in the world the Orthography, Pronunciation and Etymology of words will call for reference, and this valuable little book is ever handy, either in the pocket or on the writing table to satisfy the inquiry. It is handsomely gotten up, with flexible covers, printed on thin but opaque paper, so that words on the opposite sides of the page do not show through. The type is clear and distinct, and we have seen few books of its size that fill so well its design. It is published at the modest sum of $1.00, or $1.50 with thumb index. It will be found a valuable adjunct to the library of the student or practitioner, and we honestly recommend it.—Ed.

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"INFORMATION," as it is called, is a monthly magazine designed by its editor, Dr. L. P. Bethel, who is also the editor of the "Ohio Dental Journal," as a medium of instruction, information and amusement for the dental office, to patients who may be in waiting to fill their appointments. Its contents will not be only concerned with "Dental Hygiene," although this is its main object, but will contain other articles to interest and claim attention of those who pick it up and read the short articles, which require but a few minutes. Dentists will find it, not only for their patients, but for themselves, a great source of interest. It is published at $1.00 a year, but any subscriber to any of the regular dental journals may obtain it at club rates, i. e., 50 cents additional above the price of the dental journal they subscribe for.

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THE WHEREWITHAL, OR NEW DISCOVERIES IN CAUSE AND EFFECT. BY TOWNSEND.

We take pleasure in commending this book, not only to members of the profession, but to all who would learn "*how to think*." The leading questions induce thought, deliberation and contemplation on any subject one is disposed to render clear and forcible, and much of the wasted energy to accomplish the end in view is simplified by the questions which are offered to aid the investigator in his search after elucidation.

The book is an advance, far ahead of our times, and is published by the "Wherewithal Book Co." at the modest price of $1, and obtained at the "Bourse Building," Philadelphia, Pa.

We commend it to all educators, school directors, and any interested in the cause of education.—Ed.

## OBITUARY NOTICES.

### Dr. Gardner Quincy Colton.

Although we do not know of Dr. Colton's having practiced dentistry in any other department than the painless extraction of teeth by the administration of Nitrous Oxide Gas, we believe him to have been the founder of the "Colton Association," which was established in New York for this purpose solely.

Dr. Colton was a scientist and the designer of the first electrical locomotive. On one occasion, while lecturing on Chemistry at Hartford, he administered Nitrous Oxide, or, as it was then called, Laughing Gas, to any of his audience who were disposed to take it. Some of these sang, recited, wept, fought, or indulged in antics of various kinds; among these several were severely bruised and wounded by the benches in which they came in contact. It was noticed that when the effect of the gas passed away, these did not complain of their wounds, hurts, or contusions and said they felt no pain.

Dr. Horace Wells, who was among the audience, conceived the idea that the gas could be made available for the painless extraction of teeth and made arrangements with Dr. Colton to have a bag of gas at his office the next day, offering himself as the subject for the operation. Dr. Colton administered the gas to Dr. Wells and Dr. Riggs extracted the tooth, which Dr. Wells said was absolutely painless.

Elated with the success of the operation, Dr. Wells began the use of the gas, and tried to induce other dentists to use it for the painless extraction of teeth. In this he showed his entire unselfish disposition, offering the boon to suffering humanity, but Dr. Wm. T. Morton, of Boston, disputed the claim of Dr. Wells as the discoverer of anæsthesia and offered what he termed Letheon, as a more efficacious agent, which he sought to patent. Letheon being nothing more than Sulphuric Ether, which he disguised with some essential oil.

Dr. Wells exhibited the effect of the gas, the subject being a boy for whom he extracted a tooth. Unfortunately for him, the boy uttered a cry when the tooth was extracted, (a circumstance which is frequent with the administration of this agent) although he admitted he suffered absolutely no pain and was utterly unconscious when the tooth was dislodged. Morton's experiment was more successful before the professors of the hospital, but Dr. Charles T. Jackson would not go in with him in the patenting business. A long and bitter controversy arose as to which claimant was the true discover and this raged to such an extent that both Wells and Morton lost their reason.

Dr. Colton always regarded Dr. Wells as the discoverer, and it is doubtless that "The Colton Dental Association" was established by him on the instigation first brought forward by Dr. Wells.

### DR. JAMES L. GILLIAMS,

Who died on the 9th of September, 1898, was one of Philadelphia's old dentists. He was the son of Dr. Jacob Gilliams, a leading and successful dentist of his day, who enjoyed a large and lucrative practice and who was principally instrumental in the founding of the Academy of Natural Sciences. Dr. James Gilliams graduated from the Pennsylvania College of Dental Surgery in 1863 and has been a successful and faithful practitioner before and since his graduation. Some of his first work remains still to testify to his careful manipulation in the preservation of the teeth in which it was inserted.—ED.

## SCIENCE OPPOSED TO AVARICE.

"Good morning, Doctor."

"Good morning, Mr. Allcash."

"I called to see if you could make me some teeth. I need a plate; my front teeth are all gone."

"Well, have a seat and let's make an examination. Yes, your front teeth are in a bad way. Here is one central incisor entirely lost, the other and a lateral incisor broken off, but with solid roots left. You do not need a plate, Mr. Allcash; have you not heard of bridgework?"

"No. What is that?"

"It is a piece of gold work extending from one root to the other, fastened to each by means of a pin extending some distance into it, is strong, durable, cleanly, occupies only the space required for the original teeth, and, to all purposes, is a perfect substitute.'"

"But what will be the cost of such work?"

"Only about forty-five dollars."

"What will a rubber plate cost?"

"Say ten dollars, including the extraction of the roots."

"Well, then, give me the plate every time."

O, my brother, what are you going to do? This dialogue has brought us to the point at issue, to the thought which suggested this brief article. You recognize in it a conversation which at times occurs in your own office.

Are you going to extract the roots because he demands it? Are you going to yield to his demands rather than see him go to some other place to have the same work done? Are you willing to prostitute the most sacred precepts of dental science and the most lofty conceptions of eternal truth to the greed of avarice? If you do, you commit a sin before high heaven, and give a slap in the face to whatever of dignity you may possess as a dentist.

You have no more right to do it than a surgeon would have to cut the fingers from your hand for a consideration.

In this day an anterior tooth with the crown gone, but a solid root left, is no more a lost tooth and is no more to be extracted than the same tooth would be without any cavity in it but with a dead pulp. It is not our mission to destroy the dental organs.

Several years ago when we met in a Georgia city in convention of that grandest of all organizations, the old Georgia State Dental Society, we were greeted the first morning by these flying headlines in the local paper: THE TOOTH-PULLERS ARE HERE! The good people of the city, with that hospitality characteristic of Georgians, but with much trepidation, extended us a welcome, to which it was my pleasure to respond. I told them that that was all a mistake, we had not come to pull their teeth, but to discuss dental subjects in a scientific way. It was our mission to save teeth, not to destroy them. From that time on we were received as truly welcome guests.

The term dentist is derived from the Latin *dens*—a tooth, which means that dentist stands for teeth and not for their destruction. It is true that bridge-work has been vastly abused, and Brother Catching wants to amend the penal laws so as to send the fe low to the penitentiary who would put a gold crown on a front tooth, but placed with discretion there is no dental substitute which approaches nearer the ideal than does bridge-work.—D. D. A., *Dental Weekly.*

## REMARKS ON ARTICLE IN AMERICAN DENTAL WEEKLY— "SCIENCE OPPOSED TO AVARICE."

We heartily agree with the writer of the above article, as many times such conversations as he details have occurred in our office, not always from the spirit of avarice, but sometimes from pride, ignorance or indigence.

Many have been the occasions when we have been obliged to make a stand and refuse to extract teeth which we felt we were able to save or crown—for young girls who were ashamed of their ugly irregular teeth, and who would not hearken to our advice not to have them extracted, although we were willing to take their circumstances into consideration. "No, they were tired of their ugly crooked teeth and wanted pretty false teeth that would not hurt." We would speak of the discomforts of a plate, in our effort to dissuade them from what we knew was wrong, but would have to end by saying, "We will not extract your teeth, because we know we would do wrong. If you be determined to have a plate and want us to make it for you, and can find a dentist with so little conscience as to extract your teeth, go to him and have your teeth extracted, and when you are thus mutilated you may either get him to make it or return to us for the service."

But the answer would frequently come, "The teeth are mine; I should determine what I may do with what belongs to me."

"Not always—in the care of money or property, yes—but not in the care of your organism. Your life is your own, but if you are tired of it would you ask the physician to give you poison to rid you of it? Many other instances could I enumerate, where what belongs to you cannot be disposed of, hence though your teeth belong to you you have no right to ask of superior judgments to be deprived of them."

Among our patients we have a physician and surgeon who told me, when I related a case such as we have given above, how he had been called in consultation for a surgical case, when he remarked to his confrere, "Dr. ———, there is no need for this operation, it will not result beneficially." "I know it," the other answered, "But if I don't do it some one else will, so I might as well make the fee."

Thus we see how the world is actuated by motives of cupidity.—ED.

# SELECTED ARTICLES.

## IMPRESSIONS.

By Don. D. Cornell, D. D. S.

The first impression is not always good. No doubt it would be "*better*" if it were, but sometimes even the second or third or even the final impression fails to give satisfaction, so if this first impression is not exact enough do not become impatient, we will try again Some prefer a plaster impression, others modeling compound, others beeswax, but this impression is not of one of these materials, but one of brains.

But speaking of impressions, it might be of interest to some one of the readers of this Journal if I would make some old A B C suggestions familiar to every freshman student upon that most important step toward an artificial denture. A careful examination of the mouth will lead to the proper selection of a suitable tray, and the best material to be used. In a great majority os cases plaster-of-paris is most desirable, giving, when properly manipulated, a nearly perfect impression of the parts, even to the smaller and most delicate rugae. Contrary to the teachings of many able and more successful mechanical dentists, I favor modeling compound in many full cases, especially in soft flabby ridges, for this reason. With modeling compound it is necessary to use considerable pressure, hence the soft parts are, if care is taken to bring the pressure in direct line, forced to assume the position which they must assume when pressure is brought upon them by the plate in act ot mastication. Since the old notion of atmospheric pressure has been superseded by the true solution of retention of dentures, i. e. adhesion by contact, the use of the air or suction chamber has become almost a thing of the past, to be shelver with the old spiral spring as a relic of former times. Yet it is necessary to make the proper relief for the extremely hard center, by scraping the impression, being careful to cut deep enough to prevent riding and consequent rocking of the plate when in use; also to scrape the model to bring pressure on soft parts, especially on each side of the center at the posterior edge of the plate. It requires more care and study to make these changes in the impression and model than most dentists realize until they learn by experience. To resume the subject of impressions, it is well to know that the best results are to be expected only when due care has been exercised in the selection of the tray. The tray should conform to the general form of the part to be copied—with but little space for material—say, one-fourth of an inch. It must not ride the center or press against the rugae, but allow as nearly as possible for a uniform thickness of material over the entire surface. In using plaster, it is best in many cases to take a hurried impression in beeswax first—in fact, to that end only is beeswax of any use as an impression material. After thoroughly cooling the wax impression, make uniform shaving of its surface, except at posterior edge, leaving a narrow ridge to act as a barrier to prevent the plaster from going back in any quantity sufficient to cause retching and possible choking of the patient. With modeling compound it is necessary as with plaster to have as perfect a tray as possible, using only the minimum amount of material and of uniform thickness, as it is more readily inserted and removed ; and, unless a case of cleft plate, you do not need an impression of the whole of the alimentary canal. Furthermore, the material cools quicker and more uniformly, and should be perfectly cooled before removal. After you have removed the impression, before dismissing the patient, take up your mouth mirror and with the reverse end of a burnisher or other suitable instrument pass over the palatine surface of the mouth carefully, noting the hard and soft parts and marking your impression accordingly, trimming the impression for relief of hard and making scratches to be copied on the model to show you where to bring pressure on soft parts by trimming the model. For most partial cases, especially if you desire to close a tooth or teeth, plaster is best, if not the only, reliable material. Use the beeswax as for full cases, trimming deeper where teeth come, and making the sockets of a retentive shape. Follow with plaster, to which may be added about one fourth powdered pumice stone, and, should the impression fracture, as it is liable to do, collect the pieces carefully and begin your puzzle work. It may require patience, but we assume you have that acquired ere you have read thus far into this article. A little waxing will seal the parts and you have an impression, if carefully taken, that is exact enough to proceed in the construction of a denture that, while often tolerated, is seldom perfect as it should be. To recapitulate—the proper tray is all important.

To have a complete outfit of trays requires many blanks, I will call them—that is, duplicates to be changed to meet the requirements of the different cases as they present themselves. Don't be afraid to file or whittle, chisel or bend a tray. Make the tray suit the case in hand at all hazards. After you have pursued this plan for a number of years you will find, upon taking an inventory of your laboratory, you have, instead of one dozen, several dozen trays, and one ready for almost any case demanding your service.

Careful manipulation of the material your judgment and experience has taught you to choose, making due allowance for the relative softness and hardness of the part to be covered, a careful pouring of the model, and you have a foundation upon which to build the denture, without which the best efforts on your part will prove a failure.—*Dental Century.*

## DIFFUSION OF REMEDIES IN ALVEOLAR ABSCESS.

The attempt to drill through the foraminal apex of a tooth root is too hazardous an operation to be attempted, save in exceptional conditions. The canal is never a straight channel, it being deflected as soon as it reaches the limit of the dentine. This makes it, in most instances, an impossibility simply to enlarge it, even dismissing the fact that it is usually a delta, instead of having but a single opening. When, as is too often the case, the foramen is quite impervious and remedies cannot be forced through, it materially complicates the treatment of alveolar abscess. This is especially the case with bicuspids and molars. When it is impracticable to open through the tooth to the point of infection, but two methods for successful medication remain. The one is to open from the outside, a painful, troublesome, and with molars too often an uncertain process, and the other to clean out the canal as far as possible and then trust to the diffusive power of the remedy.

A great deal has been said and written about the penetrative power of carbolic acid. It has been asserted by high authority that as a coagulant it is self-limiting, and that its ability to penetrate tissue of any kind is but slight. This certainly does not hold good in medicine, for its destructive power on certain internal organs is universally recognized. That its topical action on albuminoid tissues in forming an insoluble carbolate may circumscribe its powers may very well be but that this inhibits its diffusion through a tooth and prevents its therapeutical or antiseptic effect on tissues beyond is not in accordance with clinical practice, or with the observation of numerous careful experimenters. Our own experience of many years has brought the conviction that there is no remedy with which we are acquainted that is so well adapted to treatment of septic conditions that must be carried on through a tooth wall, as carbolic acid. We have tried many drugs, only to be driven back to the use of this one reliable agent.

The method of employing it has usually been as follows: The canal is opened as far as possible, and if constricted is enlarged, either with instruments or by the use of sulphuric acid. When fully satisfied that the foraminal opening is not patulous, and that it cannot be opened by forcing through a fine spring-tempered broach, the rubber dam is placed in position and pure carbolic acid is pumped to the farthest extremity. A few threads of cotton are then wound on a broach, dipped in the remedy and made to carry all they will convey. This is thrust into the canal as far as possible and left there, thus filling the opening full of carbolic acid. A pledget of cotton as large as can be used is saturated with a chloro-percha solution and packed into the cavity, thus forcing the carbolic acid into every interstice and hermetically sealing it in, and the patient is dismissed for the time.

The cavity is usually opened the next day. If the carbolic odor is plainly recognizable it is an indication that it was unnecessary to disturb it so quickly. If it has departed it should have been changed earlier. That is another reason for the selection of this remedy. The presence or absence of its peculiar and easily recognized smell is a sure indication as to whether or not its virtue has departed and its antiseptic power is neutralized. Until it has thoroughly saturated and sterilized the tooth tissue it may need frequent renewals, but after that it may be allowed to remain a longer time.

A comparatively small proportion of abscesses will refuse to yield to persistent treatment of this kind. When it is found to be ineffective, further degenerate changes will almost certainly have succeeded. Secondary pus pockets may have been formed by the burrowing of pus back into the bone,or through the infective osteitis that has been the result of the acute inflammation, and these, beyond the reach of the antiseptic, may continually reinfect the primary cavity and prevent healing. Or the cavity in the bone at the foraminal apex, caused by the breaking down of the osseous tissue, may be so large that it is impossible thus thoroughly to sterilize it. Or there may be some necrosed tissue, which of itself is sufficient to prevent restoration. In such cases the only alternative is to open through to the seat of disease from the outside, and to remove the affected portion of bone. It should not be forgotten that the infected point is not necessarily at the apex of the tooth.

The cure of an alveolar abscess by these means is usually more readily brought about in a lower than in an upper tooth, because the diffusion of the remedy is assisted by the force of gravitation. But in either jaw, if due patience and perseverance are exercised, nearly all cases of uncomplicated alveolar abscess may be successfully treated through the penetrative power, the absorption and diffusion of carbolic acid thus employed.

## PRACTICAL PLACE.

### SEPARATING IMPRESSION AND MODEL.

Dr. J. A. Robinson, Morrisville, Vt., says: I was taught, after the model was hard, to whittle away the impression and leave the model untouched by the knife, if possible. I now drop the model and impression into hot water for a minute or two, after which they will separate without the least trouble, leaving the model much smoother than if whittled out. Another, and, perhaps, a more important result of this method of separating impression from model, is being able to make another model in the same impression, for, in nearly every instance, especially if a trifle larger tray has been used, the impression will come off in such large pieces that they may very easily be placed back into the same tray, fastened there with a little wax and another model made.—*American Dental Weekly.*

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### MIXING AND APPLICATION OF FORMAGEN.

Several of the formaldehyd compounds, foremost among which formagen is being praised largely by many of our fellow-practitioners across the ocean. Of course they are advertised extensively; it seems therefore strange that we over here hear very little of the novelties—that is to say, we make very little or no use of them. It may be safely stated that this can be accounted for by the conservatism of the American dental profession at large. While we are having good old stand-bys, we are cautious with all new medicaments and materials, and give them a long year's test before we praise them as infallible.

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### TO PREVENT RECURRENCE OF DECAY.

When the cavity is ready for the filling apply formalin (forty per cent.) for five minutes. Then dry and coat with varnish of Canada balsam containing two per cent. of formalin. Then fill as usual.—**A. C. HART**, *Items of Interest.*

## SECURING IMMEDIATE SUCTION IN DENTURES.

The plate is moistened, and then simply sprinkled with fine powder of gum tragacanth. The plate is then pressed in place, and no matter how good or bad a fit, it will hold firmly for a day under almost any use or abuse. The advantage of this will be apparent to any one; for the first half-hour or few minutes after a plate is put in for the first time makes or mars the reputation of the dentist, for the time being, in the estimation of the inexperienced patient, whose efforts to "suck up" a plate, if not immediately successful, are at once discontinued, the plate is taken out, and the invariable remark is, "It don't fit."

A patient will bring a rickety, ill fitting plate, and after being without it the few hours necessary to repair it, will insist that the plate fitted perfectly before it was confidingly submitted to our care, but now it feels as though it had been made for another party. A thin coating of tragacanth will even up all irregularities, sooth the wounded sensibilities of the patient, and prevent the plate's wounding the sensitive membrane of the mouth.—*American Dental Weekly.*

## LINING CAVITIES WITH VARNISH.

Mr. S. B. Palmer, in *Cosmos*, says that when sensitive dentine has been dried, the surface is not sensitive if filled while dry, with varnish, or paraffin melted in, sensitiveness does not return. Such a coating is not metal, and vitality is not destroyed by contact with it. If heavy varnish is used under amalgam the fillings remain bright on the hidden surfaces, showing that there is no leak. Phosphate fillings are benefited by thus protecting the dentine from the effects of acid. Nothing can be better than a gold filling properly put into a varnished cavity.

## EVACUATING AN ABSCESS.

Take a rubber cup and fill up the small hole with a plug of wood or gutta-percha. Dip in water and place over a fistula opening on gum. The action will be one of suction, and draw out all pus and blood and relieve, also allay, congestion. Then paint gum with preparation of iodin, glycerin and aconit.—DR. LUELLA COOL, San Francisco, *Dental Brief.*

THE
Dental Office and Laboratory.
FOURTH SERIES.

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# THE CONSTRUCTION OF CROWN AND BRIDGE WORK.

BY THEODORE F. CHUPEIN, D.D.S., Philadelphia, Pa

[SEVENTH PAPER.]

We will next describe how to make a simple bridge of one gold crown over the second bicuspid and a dummy in the interspace, representing the first bicuspid. The first effort will be the reduction of the second bicuspid.

If the young dentist will take a saw and saw through a bicuspid tooth *at its neck above the enamel*, he will find that the size of the root at this point is very much less than if he measured the size of the crown at its masticating surface; also, that the swell of the crown decreases from this point to the neck. This will also be shown if he take a dentimeter measure of the tooth at this point and compare their sizes. It follows then that the tooth will have to be reduced, as is shown by Fig. 93. Not only will this reduction have to be made on the tooth around its entire circumference, which may be done with conundum disks, barrel-shaped and bell-shaped points, but the grinding surface of the tooth will also have to be reduced in order to compensate for the thickness of the gold which will cover this part of the tooth when the crown is constructed. To tell when this part of the crown is sufficiently reduced so that it will not strike its opponents, we have adopted the following plan: We take a strip of cardboard about a quarter of an inch wide, cut from an ordinary business card, and, placing it between the teeth, direct the patient to "close the teeth." If the opposing tooth or teeth strike, the cardboard will be held firmly, but if the reduction has been sufficient the cardboard will pull out easily. This should be tried at various angles so as to be sure that the tooth, for the barrel crown, has been reduced at all points, so as to prevent the gold which will cover it from being touched by the opposing tooth.

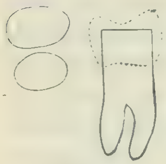
FIG 93

The tooth being reduced on all surfaces, an impression is taken with plaster of paris and a model made. When the model is removed from the impression, the plaster tooth is cut about the one thirty-second of an inch, or a trifle more, at its neck around its entire circumference, so as to make the tooth this much longer. The object of this is for the purpose of letting the ferule, which is to encircle the tooth, sink slightly beneath the free margin of the gum and thereby keep the parts clean. This being done, an impression of this plaster tooth is taken in Mouldine, from which a die in fusible alloy is made. On this die a ferule is made. The crown may be formed in two ways. The gold used for this purpose is 30 gauge in thickness. The pattern is made about three-sixteenths of an inch higher than the tooth. The piece of plate is chamfered at its edges, so as to make the lap the same thickness as the rest of the plate, in the manner we have already described and illustrated. The ferule is formed and driven on the die as also described and illustrated. When this ferule is made to fit accurately the circumference of the die, as well as around the gum festoon, the upper edges are "nicked" with small scissors at a number of places, and each nick is bent over on the masticating surface, one at a time; as each nick will lap the nick which preceded it, the amount of the lap is noted, the nick is lifted again and so much of the lap cut off, so that in proceeding in this way with each nick a perfect crown is formed *of one thickness all over.* When all the nicks are hammered in close opposition, a little solder flowed over all the nicks completes the crown. Fig. 95 gives the idea which we have tried to describe.

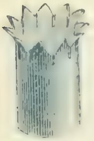
FIG. 95.

Another plan for making these barrel crowns is to fit the ferule as above described, but instead of letting the ferule be longer, at the masticating edge it is trimmed even with this and then chamfered. A plaster impression is taken, with the ferule in place, a die made and a cap swayed to fit over the masticating surface. This cap is soldered to the ferule and the crown completed.

In order to have a lead counter die, into which the cap is swaged, it is only necessary *to take an impression of the impression in mouldine* and pour melted lead into this. This will form the lead counter-die, into which the gold cap may be swaged from the fusible metal die.

The crown being made, the dummy which is to represent the first bicuspid is the next consideration. The crown is set in place over the prepared tooth, and the bite taken with *a small piece of wax*

The bite is removed and an impression is taken, with the crown in place, with plaster of Paris. This impression is filled with plaster and sand, and when hard the impression is cut away. The bite is now placed on the model and the model placed in the crown articulator, when the bite is run into the depressions. As to this, we always prefer to make a model of the opposing teeth, and either set this into the imprint of the bite, or place this model against the opposing teeth without reference to the bite. The latter plan we have found usually more reliable, as we can generally see how the teeth antagonize by the worn surfaces, so clearly indicated by the model from the plaster impression.

The occlusion thus accurately secured we next procure the porcelain facing.

The facing procured, it is backed *before grinding*. We prefer to use platinum for the backing, as we can fit the backing better with this metal than with gold : besides, by backing the tooth first, if the tooth has to be ground so that the pins are encroached upon, you will not run the risk of fracturing the tooth when the backing is rivetted as when this is done first. A little of the plaster and sand model to which this dummy is adjusted, may be scraped away so that the dummy may press slightly into the gum and give the appearance as if it were growing out of the gum.

The cutting edge of the porcelain facing is now ground off square, and a solid filled tip is adjusted to it, the workman being guided in this adjustment by the articulation. It is better that the adjustment be not too hard or too close. The opposing teeth should be kept apart from the articulatory face of the dummy by at least three thicknesses of ordinary writing paper.

The manner of making these solid tips has been already described.

The tip is stuck to the backing of the porcelain facing with adhesive wax, taken from the model, invested and soldered. When soldered it is replaced in position on the model and stuck to the gold crown on the model with adhesive wax. It will not matter if the adhesive wax flow over the model as well as over the dummy and crown, as the case will be soldered on this model, and will not have to be lifted off.

The bridge, so far constructed, is now cut away from the articulator, and the sand and plaster model is trimmed down to its smallest dimensions. It is then placed in a bowl of water, while plaster and sand are mixed, when the model and gummed bridge are invested into this fresh investment.

When this is hard it is trimmed up. In reference to this trimming of the investments, we gave some cuts in a former paper how this should be done, so that the full power of the blaze from the blowpipe would be exerted at the points it was desirous the solder should flow.

The adhesive wax is now nicely scraped away from the work and set over the Bunsen burner so as to *gradually heat up.* When the work is well heated it is transferred to the soldering block; flux and solder are applied, and a blast or two from the blowpipe completes the work. It is then permitted to cool gradually, after which it is boiled in pickle, then ground into shape by carborundum wheels in the lathe and finally polished.

Fig. 96 illustrates a bridge such as we have described.

When taking impressions of isolated teeth in plaster of Paris, we improvise an impression tray of a piece of tin. The tin plate is cut in the form of a half circle, and when bent, forms a tray like a small funnel without the spout. Into this the plaster is placed and the impression taken. A piece of paper is wrapped around this impression several times and plaster of Paris poured into it. When the model is removed from this impression it is trimmed *at the neck of the tooth*, about the one thirty second of an inch, so as to make the tooth this much longer. The object of this trimming or lengthening is to permit the crown that is to be fitted to the tooth sink beneath the free margin of the tooth, and thus exclude all accumulation of food.

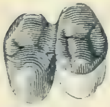

FIG. 96.

When the model has been thus trimmed an impression of it is taken in mouldine, and into this impression fusible metal is poured, giving us a metal die.

Mouldine may be made by incorporating glycerine with finely powdered Fuller's earth. The glycerine is added a little at a time while the earth is in a mortar, the incorporation being effected by grinding with a pestle. It should be made into a mass the consistency of putty. In Winter it gets quite hard and stiff, but it may be brought to its proper working consistency by heating it and working in, while warmed, a little more glycerine.

In the construction of bridge work the first thing will be to make the crowns. The crowns are made on dies, and the dies made in the manner we have just described. When the crowns are made they are placed on and accurately fitted to the teeth in the patient's mouth. The bite is then taken *with a small piece of wax*, and then an impression with the crowns in place. Into this impression *plaster of paris and sand* are run. Before running the plaster and sand into the impression, it is well as a precaution against the breakage of the plaster and sand model to place a piece of iron wire *into each crown*, letting this protrude about a quarter inch This will materially strengthen the plaster teeth on which the crowns are. The impression is cut away when we find the gold crowns on the teeth of the model, just as they were in the mouth. The dummies are then fitted into the space, stuck to the crowns on the model, removed from the articulator; the plaster and sand model to which the dummies are stuck is cut to its smallest dimensions. This model is soaked in water and all invested in more plaster and sand investment, trimmed, heated, soldered, ground up and polished. Bridge work done in this way will not disappoint the workman, as it will fit into place with the same accuracy that a glove fits the hand.

In the case of a bridge, such as we illustrate by Fig. 99, the two lower central incisors are lost. The attachment was made by making two open-faced crowns over the lateral incisors. These teeth were trimmed so that they were no larger or wider at their cutting edges than at their necks. An impression was taken. When the model was run in plaster of paris the cuspids were cut away from the model, which left only the two incisors standing; these were trimmed at their necks, as before described, so as to slightly lengthen the teeth. An impression of these was taken in mouldine, and from the die crowns were made. Fig. 100 shows the die made by cutting away the cuspids. The crowns being constructed, were placed on the teeth and an impression taken. This impression brought away the crowns, when the impression was run with plaster and sand, and the work proceeded with as already described.

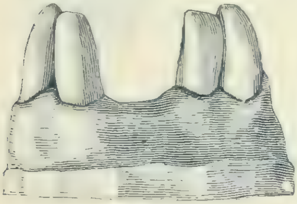
FIG. 99.

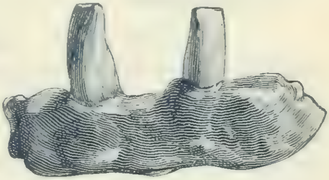
FIG. 100.

In reference to taking these impressions we have a word to say. On looking at a case the impression would seem a simple affair; but on trial it will sometimes be found that it breaks and drags so badly that it would be impossible to work from a model made from it, even though the parts were accurately replaced. Such was the case with the case illustrated by Fig. 99. We made several attempts with a lower impression cup, like Fig. 101, having cut off the back part of it, and thus made it smaller, but, as we say, with such indifferent results that the impression could not be used. We conconcluded that the tray was *too stiff* and unyielding for the case, so we got a piece of German silver plate and, bending it as shown by Fig. 102, filled this with plaster when the impression was taken at the first effort without trouble. We learned by this that this thin improvised cup *yielded* in withdrawing the plaster, which enabled us to effect our object, while the stiff *unyielding tray*, Fig. 101, prevented our doing so.

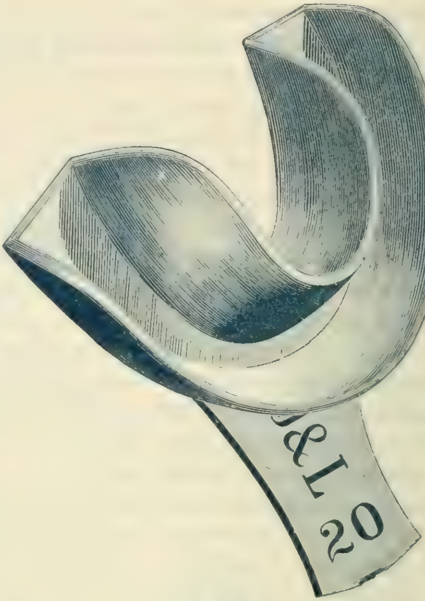

FIG. 101.

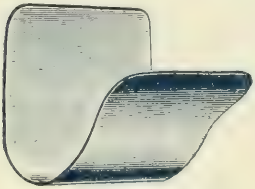

FIG. 102.

In making a crown for a molar, which is to be used as a pier or buttress, it will sometimes be found that the antagonizing tooth strikes so forcibly on it that we could not use a solid tip on such a tooth without cutting away so much of the occlusal surface as to give unnecessary pain in doing this. In a case of this kind we first make the band to encircle the crown, then we place a piece of wax within the band on the occlusal surface. Then we direct the patient to bite hard into the wax. We then take an impression with plaster of Paris of this tooth, from which we make a die. On this die, we press up, by means of burnishers, a piece of lead about 28-guage thickness. We place this piece of lead exactly in position in the wax, which we had placed within the band on the pier tooth, and again direct the patient to *bite hard*. This drives the piece of lead *this thickness deeper into the wax*, and in this way compensates for the thickness of gold plate which we will swage over the band in order to form the cap or occlusal surface of the tooth.

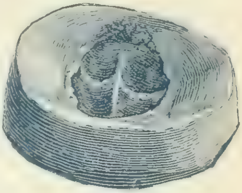

FIG 103.

When the wax has been treated thus, all overhanging superfluous pieces are carefully dressed away from the band and an impression taken with plaster. Shown by Fig. 103. A die is made, as shown by Fig. 104, *and an impression of the impression, Fig. 103, is taken with mouldine.* Into this mouldine lead is poured, which forms the counter die into which the cap is swaged.

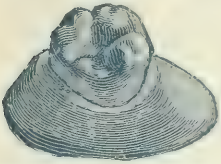

FIG. 104.

In much the same way as we have indicated how to proceed in making a small bridge, such as we illustrated for Fig. 96 of this paper, the good root of a second bicuspid may be crowned with a gold shell and a dummy attached to it. Before inserting such a bridge, a screw should be inserted into the root of the second bicuspid, which will engage into the cement in the gold crown, and thus give additional security to the bridge.

[TO BE CONTINUED ]

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[THIRTY SEVENTH PAPER.]

# LEADING QUESTIONS AND ANSWERS FOR DENTAL STUDENTS.

BY THEODORE F. CHUPEIN, D.D.S., Philadelphia, Pa.

## DISEASES OF THE PERIDENTAL MEMBRANE, CONTINUED.

Q. Is it difficult to diagnose acute apical pericementitis?

A. The symptoms of this disease are so uniform, and the report of patients affected with it are so regular, that the dentist may know at the outset what he has to tackle. When the *pulp* is affected, and not the peridental membrane, the symptoms are entirely different. In the former case the tooth is not sore or tender to pressure, but when the peridental member becomes involved the tooth is always sore to the touch. When the pulp is affected, before the inflammation has extended to the peridental membrane, the patient is not certain as to which tooth is giving pain. When the patient complains of pain beneath the eye, or near the ear, or on the cheek, or any part remote, it may be set down as certain that the peridental membrane is not yet affected. Even when a tooth is in an entirely healthy condition it responds to the slightest touch, showing that the peridental membrane is the organ of touch. This sensation to the slightest pressure is aggravated when this membrane becomes diseased, consequently it is the unerring symptom when this membrane becomes involved. On the other hand, the pulp is not the organ of touch to a tooth.

Q. Do we notice any other differences of sensation between the pulp and peridental membrane?

A. Yes; we notice that the pulp is excessively sensitive to changes of temperature, which sensitiveness is increased when it becomes diseased or exposed, while the peridental membrane is little affected by thermal changes, and even when this membrane becomes diseased the changes of temperature seem to affect it but little. In this way a diagnosis is readily inferred between diseases of the pulp and diseases of the peridental membrane. If, however, the disease of the peridental membrane has caused an accumulation of gas within the pulp chamber, the application of heat within the mouth will cause an *expansion* of this gas, which, being pent up within the tooth, will cause a pressure, with resulting pain, while the application of cold, producing a *contraction*, will relieve by reducing the pressure. This will still farther aid in diagnostics, since it is noticed that when the pulp is affected *both cold and heat cause pain.*

Q. What do we notice when the pericementum in the apical space assumes a chronic form?

A. When the disease assumes this stage patients will indicate the tooth which is giving the annoyance. They are able to locate it with certainty. The pain may be severe, or it may be only slight, amounting only to a sense of discomfort. This pain may continue for a long time or it may only be transitory. Sometimes these cases of chronic apical pericementitis are marked by a considerable redness or congestion of the gum about the tooth indicated as causing the pain. When the pain is present the tooth will be sensitive to pressure when this pressure is made by the finger on the gum towards the end of the root, but no pain is felt when hot or cold liquids are taken into the mouth.

Q. Is not chronic apical pericementitis sometimes confounded with the gangrenous disease of that membrane?

A. Yes, as some of the latter manifestations are common to both. In phagedenic pericementitis, or the destructive ulceration of the peridental membrane, this membrane is destroyed, as well as the alveolus, leaving the tooth loose and the gum red and congested, with some of the indications of chronic apical pericementitis, hence the examination of the membrane renders the diagnosis clear in the one so as not to confound it with the other.

Q. What is the cause of apical pericementitis, whether in its acute or chronic form?

A. It is due to some irritating particle finding its way into the apical space through the apical foramen.

Q. Whence do these particles causing this irritation come?

A. Generally from the decomposed pulp.

Q. Why may not these particles find an exit through the cavity of decay instead of through the apical foramen?

A. In such cases the pulp has doubtless been long dead and putrescent; the nerve chamber and cavity of decay are packed and crowded with an accumulation of decomposed food, offering an insurmountable barrier to all escape by this outlet. Besides these cases, we find irritations of this kind to exist in perfectly sound teeth, where the pulp has died or been killed by accidents, and a decomposition of the pulp to have followed. Again, a number of such deaths of the pulp are induced from the effect of shocks brought on by thermal changes acting on it through fillings, which may have been inserted in too close proximity to the pulp, or from pressure acting on the thin lamina of tooth bone separating the bottom of the cavity to the top of the pulp. In any of these cases there is no outlet except at the apical foramen, and hence through this outlet irritating and septic particles from the decomposed pulp find their way into the apical space.

Q. Why is it that we find teeth with dead pulps remain a long time without giving any pain?

A. It is no uncommon thing for teeth so circumstanced to remain comfortable for a long time, and we are led to the belief that the reason of this is that the pulp has dried up or become mummified instead of putrifying within the tooth. Nevertheless, serum will percolate into the space which will decompose, and the result of this decomposition furnish the septic material which will set up the inflammation in the apical space.

Q. What is the treatment in such cases?

A. If there be a cavity of decay leading into the pulp chamber, all the decomposed filth and food should be removed, and a free, direct enlarged opening should be made into the pulp chamber, so as to afford access into the root canals. The decomposed pulp is removed and perfectly cleansed. Barbed broaches are used for this purpose.

If the pulp has any consistency left, it may be brought away on the broach when the broach is skilfully used, but ordinarily the pulp is so entirely decomposed, or is in such a semi-liquid condition, that the barbs have nothing to take hold of. When all of this decomposed matter is removed, a very fine barbless broach is passed into the canal and insinuated through the apical foramen, so that should there be any pus gathered into this space it may find an outlet through the root canals. This being done, the root canals are bathed with disinfectants, deodorizers and germicides, so as to restore a healthy condition to the parts.

Q. What disinfectant is mostly used for these cases?

A. Carbolic acid.

Q. Has not objection been raised to the use of this agent as well as others having the tendency to coagulate albumen?

A. Objection has been raised to their use on the grounds that they close the apical foramen by their coagulating tendency before a complete cure has been effected.

Q. Has the objection been confirmed by practice?

A. In theory the objection seems to hold good, yet in practice many skilful, careful and observant operators have not found it worthy of consideration.

Q. What is to be done after the chamber and root canals have been disinfected?

A. These should be loosely filled with cotton charged with some antiseptic, and the cavity of decay filled moisture-tight with a temporary filling. The pain felt will usually subside, unless there be a large accumulation of pus, in which case the temporary filling must be removed as well as the loose root filling. Farther antiseptic treatment is demanded, and a loose temporary filling inserted. In a treatment of this kind little by little the case can be made comfortable, soreness and pain will disappear, and the roots and cavity can be permanently filled.

Q. Should pain continue after you are sure that you have reduced the parts to a perfectly clean and antiseptic condition, what is to be done?

A. Counter irritation is often successful in reducing the pain.

Q. How is this applied?

A. Mustard leaves are sold by druggists in sheets. Small pieces of these are cut about the size of the thumb nail, the gum about the tooth is wiped dry, and the little plaster applied to the gum, the cloth side of the mustard leaf protecting the cheek. Or a piece of blotting paper, about the size indicated, is pasted or stuck to a piece of rubber dam, the blotting paper moistened with chloroform, the gum wiped dry, and then applied. The rubber dam protects the cheek or lip, permitting the chloroform to burn the gum. This acts very promptly and soon affords relief. Should the gum show considerable congestion, relief may be procured by lancing or passing the gum lanced around the circumference of the tooth. Should pain still persist, the bone may be penetrated with a sharp drill so that it will pass into the apical space.

Q. Is this not a painful operation?

A. It would be if means were not taken to render it bearable. Prof. Black, speaking on this subject, says: "A still better result is usually obtained by the use of carbolic acid for the painless penetration of the apical space. It is best done in this wise: The mucous membrane is first dried at the point at which it is desired to make the opening, and napkins are so placed as to keep it dry. Then a plugging instrument with fairly sharp serrations and of convenient shape is selected. The point of this is dipped into a 95 per cent. solution of carbolic acid, and a drop conveyed to the mucous membrane; this will at once produce a white eschar. Then a slight scratching motion with the serrated point is begun, with the view of removing the tissue that is whitened. This is continued until the carbolic acid is thick with the debris of the tissue torn up, then it is dried out and another drop added as before, and the process continued. This is repeated as often as may be necessary, going deeper and deeper into the tissue in the desired direction until the bone is laid bare. Then a fresh drop of acid is laid on the bone and the periosteum carefully raised over a sufficient space; then with a sharp chisel cut through the peridental membrane. This will generally cause some pain and some bleeding, but after giving a little time for this to cease, and adding more of the acid, the apical space can usually be reached without difficulty. No blood should be drawn at any time during the operation except in penetrating the wall of the aveolus. In doing this no tissue is removed until it is anaethetized by the carbolic acid. This is a little tedious, but it is almost painless, and the general effect is usually better than by other modes of penetrating the apical space. The carbolic acid has the effect of modifying the pain, and the opening left does not close so readily. I have frequent occasion to use this process with very sensitive patients, and have found it to be quite satisfactory."

Q. Is not constitutional treatment advised in cases of acute forms of this disease?

A. It is. Warm foot baths, saline cathartics, quinine (6 to 10 grains), and *one drop* doses of tinct. aconite *given hourly*, followed at bedtime by a full dose of Dover's powders (10 grains), have been recommended.

## ANTI-KAMNIA.

It has been suggested that if a five grain tablet of anti-kamnia be crushed to a powder, and the powder put, by means of a moistened pledget of cotton, into the socket of a tooth giving pain, the pain will be relieved. The same means are also recommended for an aching tooth, by placing the powder within the cavity of decay.—T. F. Chupein.

## INVESTMENTS FOR SOLDERING.

Dr. Zeller's formula, which will stand any amount of heat without cracking, is made up of 1 part of powdered pulp asbestos and 2 parts of plaster of paris.

We have seen this investment after an aluminum denture had been cast on it as perfect as before it had been subjected to any heat at all. The advantage with it also is that it is smooth, and may be trimmed with more facility than sea sand and plaster of Paris for the same purpose.—T. F. Chupein.

## TO PREVENT PLASTER FROM STICKING TO THE TEETH WHEN TAKING IMPRESSIONS.

An otherwise perfect impression is often spoiled by particles of the plaster adhering to the necks of the teeth when taking the impression. Slight defects of this kind may be "doctored," but never so accurately as when the impression is perfect. The trouble about this seems to be that the impression is removed from the mouth *too soon.* If the plaster be permitted to remain in place until it gets *quite hard* these imperfections will not occur. Use impression plaster, which sets promptly, and count from *five to six hundred moderately slow* from the time the plaster is placed in position.—Theodore F. Chupein.

## PACKING PINK RUBBER.

At one time we almost invariably had disastrous results in packing pink rubber to imitate the gums when making artificial teeth, by the red or black rubber cropping through and spoiling the effect. Now we rarely, if ever, have such results, and have discovered the cause of our failure.

Pack the pink rubber well between the teeth, using a thin instrument to do this. Cut the gates or outlets for any excess of rubber, *entirely on the* BACK *of the flask, none whatever on the* FRONT. Boil the flask well, at least ten minutes, and *screw down the two front bolts first.* When the front part of the flask is brought together then screw down the back nut. Using these precautions, we cannot recall a single occasion where the red or black rubber has cropped through to spoil the effect.—THEODORE F. CHUPEIN.

## SELECTED ARTICLES.

### CATAPHORESIS—A WARNING.

The experience of a thousand wise predecessors will not divert folly. We must all get experience for ourselves, and no doubt it is a providential dispensation. But there is no excuse for that presumption which dogmatically arrogates an almost divine right of judgment; which, in the infancy of a new idea, or a novel experience, insists that it has encompassed within its opinion, every possibility of fact or failure.

The cataphoresis fad is not altogether new. It is not one of those fads which are without any merits. It has been successfully applied in clinics—though the value and permanency of results are not fully seen in clinics. It is a fad which requires some special predilection and experience in a direction wherein few dentists technically excel. It is not a thing to be despised or condemned because of its failures, but rather a thing where failures should inspire to conquest. Some of its advocates have been, perhaps, too assertive in their declarations that they have seen no harm in it; that they have done no harm with it. It is generally impossible to know at once whether or not mischief has been done. But recently facts are coming forth to prove that toxic effects of cocaine upon the pulp have extended beyond that tissue to a dangerous condition.

Dr. M. W. Foster, of Baltimore, reported a case in the *Cosmos,* where a pellet of cotton, saturated with a 30 per cent. solution of cocaine hydrochlorate was placed in the cavity of a tooth, and the usual cataphoric current applied. The dose was repeated. About ten minutes from the last application the patient complained that the fingers of the left hand felt as if they were asleep. The symptoms became so alarming that brandy was hypodermically injected and friction applied; the patient "commenced a peculiar howling sound." The condition lasted from 3.30 p. m. until 8.15 p. m. The rigidity of the body was very marked. The power of speech was not regained until 8.15 p. m. after digitalis had been administered. The throat was very dry for a night and a day; the eyes painful, and for some time the vision was dimmed. This case is, perhaps, more pronounced than any most of us have witnessed; but, within the limited opportunities for observation, a sufficient number of cases have been known to justify extra precaution, especially on the part of those enterprising bluffers who think the possession of electrical apparatus and the merest smatter of knowledge, sufficient stock-in-trade to entitle them to rush in where experts are cautious about treading.

## PORCELAIN INLAYS.

By S. H. Guilford, D.D.S., Ph. D., Philadelphia.

The latest methods of making porcelain inlays, and undoubtedly the best and most promising one yet devised, is that of Dr. N. S. Jenkins, of Dresden, Saxony. It resembles previous methods in that it consists in making a metal matrix of the cavity, and into this fusing a porcelain body of proper shade and consistency; but it differs considerably from any other in many of its details.

Dr. Jenkins was led to experiment in the making of inlays by the desire of his patients to avoid the conspicuousness of gold, and by his failure to obtain satisfactory results by the methods previously employed. His experiments extended through several years, but in the end his efforts were crowned with success.

In making the matrix he used gold foil No. 30, having found that platinum lacked the same degree of adaptability that gold possessed, and he also found that gold heavier than No. 30 did not yield as good results.

In the matter of porcelain body he noticed that the low-fusing bodies previously used were lacking in life-like color and strength. Through experiment, and by consultation with those familiar with the making of porcelain ware, he at last hit upon a combination of ingredients which gave him the desired texture and appearance, and also fused at a considerable lower heat than gold. In addition to this his combination was subject to less shrinkage in cooling than any bodies previously used.

These combined improvements enabled him to prepare an inlay of any desired shade, and one that would so closely fit the cavity as to make it almost indistinguishable from the tooth in which it is placed.

For the fusing of the porcelain body, Dr. Jenkins has devised an oven, heated by a jet of gas and air.

The furnace is shaped like a muffle, about 3 x 3 x 5 inches, is made of Russia iron, and lined with asbestos cloth. The jet of gas and air is supplied by means of an ordinary gas blowpipe, such as is used in the laboratory for soldering, and the air pressure is obtained from a foot-bellows. The furnace is supported on feet, and in its base is a hole, of an inch or less in diameter, through which the jet from the blowpipe enters.

In making the gold matrix, the piece of foil is pressed to the shape of the cavity with cotton or spunk, held in a pair of blunt tweezers, and the margins of the cavity sharply outlined in the gold by burnishing it over the edges.

For holding the matrix during the baking, a platinum spoon is used, having a long handle and hemispherical bowl about seven-eighths of an inch in diameter. In this is placed fine asbestos, mixed with water, and the matrix gently imbedded in it. Heating over a gas flame dries out the moisture, and the matrix is then ready for the porcelain.

Instead of mixing his body with water, as has heretofore been customary, Dr. Jenkins uses alcohol, on account of its more ready evaporation. Moistening the porcelain powder with alcohol on a glass slab, it is placed in the matrix and gently dried over a flame. The platinum spoon, with its matrix and body, is now inserted into the open mouth of the muffle and the flame applied by the blowpipe. In a few minutes the porcelain is fused and allowed to cool. More porcelain is now added and the operation repeated.

In order to secure thorough fusing and make up for shrinkage, the porcelain is added and baked in two or three portions.

When completed, the foil matrix is stripped from the inlay and the latter inserted in the cavity to see that all is satisfactory. Before placing the inlay permanently the cavity will have to be enlarged inwardly, or roughened with a bur, and the inlay may also require to have a groove cut into its under portion with a delicate corundum-wheel. If it has not been done previously, the rubber-dam should next be applied and the cavity thoroughly dried. Zinc phosphate of a light color is now mixed to a creamy consistency, some of it applied to the margins of the cavity and some to the under side of the inlay, and the latter quickly pressed into position. Pressure upon the inlay, to force it home and expel any excess of cement, can best be exerted with a piece of orange-wood.

After the cement has hardened and any surplus removed from the margins, the case is complete.

Dr. Jenkins has prepared his porcelain in a dozen or two different shades, so that with these, or a combination of any two of them, any desired shade can be obtained. A large amount of skill and experience is necessary in order to obtain just the shade desired, and much practice is required to secure a thoroughly correct matrix The foil must not move while it is being adapted to the cavity, and in removing it great care needs to be exercised not to change its form. So, also, in placing and imbedding the matrix in the asbestos in the platinum spoon, delicate manipulation is absolutely necessary.

Again, practice alone can impart the skill and good judgment necessary in placing the proper amount of body in the matrix, so that, when fused, the inlay will entirely fill, but not more than fill, the matrix. If too much body be placed in the matrix, the inlay will overlap the margins and prove a failure; whereas, if too little is used, the inlay will not entirely fill the cavity.

Dr. Jenkins thinks that his furnace should in all cases be used, in order to secure satisfactory results; but there seems to be no good reason why a Downie or Land furnace, or a Custer electric oven should not be employed with equally good results. The Jenkins furnace may be used anywhere that a gas supply can be obtained, and this fact will make it more generally useful to practitioners who cannot obtain the electric current. It also does its work very quickly, for with it the porcelain body can be fused in a few minutes. Fusing in an electric oven will take longer, which would prove an objection where it is desired to make and set the inlay at one sitting.

The zinc cement with which the inlay is secured in the cavity is, of course, perishable; but where there is a close adaption of the inlay to the cavity, the line of cement exposed will be very fine, and, if dissolved out of time, can easily be replaced without removing the inlay.

Inlay work is most called for in the anterior teeth, especially upon their labial and approximal surfaces. Farther back in the mouth it would possess no special advantage over the metals now generally employed. For the restoration of corners of teeth an inlay can hardly be made strong enough in its anchorage to resist the strain of mastication, unless the tooth be pulpless so that the cavity can be greatly enlarged inwardly.

The making and setting of an inlay will generally consume more time than the insertion of a gold filling, but experience will bring with it rapidity of manipulation as in all other processes.—*The Stomatologist*

## GINGIVAL CAVITIES

The application of the rubber-dam to gingival cavities is often painful, and it was suggested to me by a prominent occulist to use cocaine in the dry form. If thoroughly macerated to the condition of pulverized chalk it can be used very nicely. The method of procedure is very simple, and covers the ground of local anesthesia very fairly. I have no doubt there has been a great deal of pain inflicted on patients in applying the rubber dam in these cases, because the operator has in reality anesthetized simply the gum tissue at that point, whereas I think it is quite necessary to anesthetize the cementum, or pericemtum. I take the crystalized cocaine and macerate it in a small mortar until it is of the consistency of powdered chalk. I then put the rubber-dam on with one finger, and draw it down clear below this (indicating on diagram) so as to form a crescent, and hold it there. I then take a little of the crystallized cocaine ground up fine and place it along this gum. There will be enough exudation from the gum tissue to moisten it and produce absorption. Then, having placed a little there, I begin to work, with the back end of the spoon, the fine powdered cocaine under the free margin of the gum, and work it down until I can place the excavator clear down onto the pericementum and not cause any pain whatever. The reduction of the cocaine to powdered form takes thirty to sixty seconds; seldom over a minute. A minute holding the rubber-dam down will not cause tiredness of the fingers, especially if you do not use great pressure. After I have, with my excavator, tested the gum and pericementum and found them absolutely anesthetized, I put the clamp on, and put it where I have a mind to, because the patient is the same as under the influence of chloroform or ether.

Where the tooth structure is so broken down that it requires great dipping down of the points of the clamp, if it is necessary I let the clamp, if it insists on it, grip a little of the tissue; but I do not cut that tissue off, because there is trouble afterward in an irritation being established, which causes a sloughing away or disintegrating of the tissue, leaving a line at the cemental line of the tooth, or root exposed. Instead of cutting that off with a lancet or sharp instrument, I take a pledget of cotton saturated with a 95 per cent. solution of carbolic acid. It cuts off and allows a healthy healing and granulation afterward.—E. R. CARTER, in Review.—*Indiana Dental Journal.*

## THE PHYSICAL PROPERTIES OF DENTAL AMALGAMS.

THE LATE PROF. T. B. HITCHCOCK, M. D., D. M. D., Boston.

[Extracts from a paper in the *British Journal of Dental Science*, Vol. XVIII., June issue, showing that excess of mercury and washing in preparing amalgam fillings is unscientific.]

" The most diverse results may be obtained by the manner in which the various amalgams are prepared ; even the best may be rendered worthless by improper manipulation. In order to obtain the best results, the mercury used should be only sufficient to cause the mass to cohere. A true amalgam should contain no free mercury, but as usually mixed there is a very great excess. If only a small proportion be used, the amalgam hardened very much sooner. If the cavity to be filled will permit it, the amalgam should be used very dry and even granular, and although it is worked with some difficulty, the result obtained is much more satisfactory. * * *

" When an excess of mercury is used in amalgam it always comes to the surface, and an unequal plug is the result ; moreover, the tendency to contract or assume the spheroidal shape is very largely increased. Mr. G. H. Mankins, lecturer on metallurgy in the London School of Dental Surgery, well states the case as follows :

" Amalgams, as a rule, are compounded of a metal and mercury, which compound is further dissolved in an excess of mercury, and although this excess under pressure is largely squeezed out, as in larger ore operations for gold or silver separating, yet it is very difficult to do this to such an extent that no free mercury is retained. And, indeed, by much the same action as when one squeezes a sponge containing a fluid, you get the mercury forced to the surface, and thus, in your operations, what is so forced between the sides of the cavita and the plug, by slow and gradual evaporating, is liable to leave a minute interspace.

" For when too much has once been added, any pressure to which we can subject it with chamois-skin and pliers will fail to remove all excess. The best results will only be obtained with a very much less amount than will remain after any attempt to remove the surplus by pressure. * * *

"If only the proper quantity of mercury is used in making the amalgam, there is but a very small amount of oxides present, and consequently less necessity exists for their removal. By an excess of mercury we get just what washing is designed to remove."

"Tests made by Mr. Fletcher with amalgam plugs containing an excess of mercury and with amalgam which had been washed gave the following results, viz: the plugs mixed with an excess of mercury are distinctly more imperfect and have a decidedly greater shrinkage in every case. The proportion of mercury left in after thorough compression with powerful pliers is about double what is necessary to make a good amalgam, and the excess of mercury cannot be squeezed out without making the amalgam so hard as to be unworkable; also the mercury comes to the surface of the filling, making an unequal alloy. As regards washing, when once wet I have *never* in a single case been able to get the amalgam properly dry without an amount of trouble such as would not be taken by ninety-nine operators out of a hundred, and the water works to the surface in packing. Several plugs put in smooth parallel tubes with an amalgam which had been washed, slipped out after hardening on the slightest force being applied. With the same amalgams which had not been washed this was most decidedly never the case under any possible circumstances with amalgams of moderate shrinkage."

"My own experiments made under the same conditions agree with the foregoing results by Mr. Fletcher." "Although Mr. Fletcher is a manufacturer, his investigations and experiments have been so extensive that his testimony is too valuable not to be used."—*Western Dental Journal.*

## ANKYLOSIS OF HUMAN TEETH TO THE JAWS.*

By Mr. Storer Bennett.

Mr. President and Gentlemen—The attachment of teeth to the jaws by means of bony ankylosis, though common enough in many fishes and reptiles, has hitherto been pronounced by our best observers, either as impossible, or at any rate as never taking place. I shall endeavor, however, to show how dangerous is the assumption in pathology that anything "never occurs," simply because it has never been our fortune to meet with it.

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* Read before the Odontological Society of Great Britain.

Some two years ago a specimen resembling a cherry stone in shape, but bony in appearance, with certain gouge marks on its surface, was sent to me by Mr. Whatford with the following history: For a considerable time a lady had suffered with a profuse discharge through the gum in the region of the lower molar. For this she consulted a neighboring practitioner who diagnosed a buried root, and endeavored to extract it. Failing in his first attempt ether was administered, and after very great difficulty and an operation occupying nearly an hour, the specimen sent to me was removed.

Though seeming to consist of bone, at one point a tiny piece of root seemed visible, and I therefore removed a section through this portion for the microscope, and found to my surprise that I had a longitudinal section through a root closely embraced by bone, with which at some parts it was so intimately blended, that it was impossible to say where one tissue ended and another began. The tooth and bone in fact were ankylosed.

At the Dublin meeting of the British Dental Association I showed this specimen, and then learnt for the first time that Mr. Hopewell Smith also had a section which he had made while House Surgeon at the Dental Hospital of London, from a case that came under the care of Mr. E. Lloyd-Williams. This case was described, and microscopic slides exhibited, by Mr. E. Lloyd-Williams, at the annual meeting of the British Dental Association in Birmingham, 1893. This patient was a man also suffering from suppuration, for which an upper bicuspid and molar were removed, with large masses of bone attached to them. Microscopically these teeth were found to be attached by ankylosis to the bone, no line of demarkation between the two tissues being traceable. In the bicuspid, which was decalcified before cutting, giant cells filling up the lacunæ of Howship are in many places beautifully shown, while the molar, of which a ground section is made, shows with equal beauty and equal certainty that the tooth and bone were ankylosed together.

Curiously enough M. Choquet, of Paris, sent some lantern slides of a case of ankylosis which I have the pleasure of exhibiting this evening, but I have had no opportunity of examining the original specimen, though I believe Mr. Hopewell Smith has been more fortunate.

These three cases then are enough to establish the possibility of the occurrence of ankylosis, and a small amount of positive evidence is far more convincing than any amount of negative assertion. Another specimen, however, was presented to me this summer by one of the students who was attending my lectures, and which proved as fine a specimen of ankylosis of a lower molar to the bone as any I have hitherto met with. In this as in the last case, the bone is of the loose cancellated character we commonly meet with in what has been described in fishes, etc., as bones of attachment, but which is, of course, normal in them, though pathological in human beings.

Lastly I have re-examined an old specimen which has been in my possession for some years—which presents appearances I have hitherto attributed to other causes, and am forced to the conclusion—especially viewing it by the side of the other sections, that it also is a case of true ankylosis.

Mr. President, you will say, I am afraid, "that these are at best but dry bones," and in a sense this is so, yet I think the subject has an important bearing on the operations of replantation and transplantation of teeth. In replantation it is true, if the operation is undertaken early, we may hope for re-establishment of the circulation in the still living periosteum; but if the operation is delayed, or in cases of transplantation, where teeth are used which have long been strangers to a mouth, the only chance on which success can be expected, is in ankylosis being established.

It is interesting to enquire why this condition has been so constantly denied. In the case of joints, or of two contiguous bones, we know that ankylosis may occur, and in these cases we may have the disappearance of intervening capsule, ligament, synovial membrane, cartilage and periosteum, and a growth of new bone which unites the two originally separated by all these tissues; in the case of teeth we have but an intervening periosteum. Why then is disappearance and replacement by osseous tissues considered such an impossibility?—*British Journal of Dental Science.*

## WHAT INSTRUMENTS SHALL I CARRY?

J. T. Codman, D. M. D., Boston, Mass.

A call came last night after midnight. A gentleman was suffering from toothache. He was a stranger at a hotel. Would I call on him and try to relieve him from pain? My first impulse was to say, No; if he wants my services, let him come to me or wait until morning. But my second thoughts said, Wherefore am I a dentist, except it be to relieve pain? Is not that my highest professional duty? And I also remembered the injunction, Be careful in your entertainment of strangers, etc.

I dressed. It rained. Cars were not running. The messenger was gone; I could not question him. What was the trouble with the stranger? Had he an exposed pulp, simple periostitis, an abscess to be lanced, an old trouble from pentup toxic matter, or new and suddenly violent inflammation of a pulp? And has the difficulty progressed so far that it is necessary to extract the tooth? I must be prepared for any emergency. If the gentleman were in my office I could be sure of having at hand all appliances for any case. I judged it was probably pain from an exposed (diseased) pulp, and I gathered an assortment of instruments and appliances to take to his relief.

That was the only thing I could do. I could not take all in the office. I had no list made out. I must remember and recall all the things I have usually needed on similar calls. Why not have a list on hand? I will make one, and it will serve for future use. When I returned from my call I was more in favor of it, for I had left behind something it would have been best to have had by me.

This is the list I have made out, and as it may be useful to some professional brother (or sister) who has been awakened from a sound sleep some time, and required to put his ready wits to work searching among his multitudinous instruments for the right things to carry with him to the sufferer, I present it to the *Journal.*

### EMERGENCY CALL LIST OF INSTRUMENTS AND APPLIANCES.

One mouth mirror [or two], to throw light.

One explorer [or two], to search cavities.

One large cutter [side]; one large cutter [end]; to break edges and to open cavity.

One [or two] long smaller side cutter, one [or two] long hoe excavator, one short side cutter, one short hoe excavator, called excavators, to clean and partly excavate cavity.

One pair foil-tongs [always necessary].

One water syringe [convenient].

One knife file, or separating files [not always wanted].

One half round, medium-cut file, for shortening bite.

One root instrument, for reaching into roots.

One gum-lance. [Have a sharp knife in your pocket.]

Six small mouth-napkins, to dry with.

One wad of cotton or absorbent fibre. [Do not forget it!]

One spool floss silk or thread, to tie pledget in [sometimes].

One pair scissors, to cut silk.

One bottle sandarac varnish, to protect cotton filling.

One bottle nerve-destroying paste, to kill pulps.

One bottle 1, 2, 3 compound or cocaine, or any good obtundent.

One small bottle toothache drops, to leave behind with patient.

On a chance of being obliged to extract an aching tooth, carry the following forceps:

One pair upper wisdom.

One pair under wisdom.

One pair upper bicuspid.

One pair under bicuspid.

One pair upper central and cuspid.

One pair under central and cuspid.

One elevator. [Use your own kind.]

The wisdom forceps may, in an emergency, be used for all the molars; the bicuspid forceps for the canines. If not, use the central forceps for them and the remaining teeth.

Put all these implements into a small, neat hand-bag, with a clean towel, and, if room, add your thinest office-coat for comfort. Bring back all your instruments, etc., and your fee, if you can get it—cash.

I have here made a list of about the smallest number of instruments, etc., that I would like to start out with at an unseasonable hour. In the daytime we may perhaps find what we have forgotten to take with us at a neighboring apothecary's store, or at some brother dentist's. If we are called to a private house and have left our cotton behind, we may find some there, or an old piece of cotton cloth, which may do, poorly, to form napkins of; but I modestly propose that this list of mine be copied and securely placed for reference where it can always be found. Each dentist may then subtract or add any other things to the list that he may prefer, or change some of them to those better suited to his fancy or individual taste.—*International.*

## BOOK NOTICES.

Anatomy and Histology of the Mouth and Teeth. By I. Norman Broomel, D D. S., Professor of Dental Anatomy, Dental Histology and Piosthetelic Technics in the Pennsylvania College of Dental Surgery, Philadelphia. With 284 illustrations. Philadelphia: P. Blackinston's Son & Co., 1012 Walnut Street. 1898.

It is rarely that we have seen a text-book more beautifully gotten up than this book of Dr. Broomel's. Everything, it seems, in the typographic art has been lavishly displayed on it, in paper, type and general get up, while the illustrations are up to date and unexceptional.

These factors are not always considered as they should be, which is to be deplored, since they contribute greatly to the pleasure of the reading and studying of the subjects of which they treat.

The book is not free from faults, but these are of a nature amenable to correction, which we feel some future editions will eliminate.

The amount of labor, care and study displayed in the preparation of specimens, to serve as models for the engravings, show the painstaking of the author and his desire to render his book in every way what it eminently is. The cut representing the ossification of the teeth present an entirely new feature, as well as demonstrating the amount of labor involved in obtaining specimens to exemplify this.

While the photographs used to delineate this are not as distinct as could be rendered by fine engravings, they must necessarily be more exact reproductions.

We could speak of the many other original features which this work presents, but will close our brief review by heartily endorsing the work and recommending its purchase by every student and practitioner.

The book is published in cloth binding at the modest price of $4.50.—Ed.

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Three Thousand Questions on Medical Subjects arranged for Self-examination with the proper references to standard works in which correct replies will be found. Second edition, enlarged. Philadelphia: P. Blackiston's Son & Co, 1012 Walnut Street. 1899.

This little work must prove a great helper to the student. Indeed, the practitioner may find it mentally refreshing to answer some of the questions or look the answers up if unable to do so. This is readily accomplished by the system so admirably added after each question, whereby the student is referred, not only to the work, but to the page where the correct answers may be found. We commend the book to every medical student.—Ed.

# PRACTICAL PLACE.

## VULCANIZING RUBBER.

Dr. N. R. Macalaster says that in vulcanizing rubber between metal or to produce a smooth surface the metal can be more easily removed from the plate and a polished surface left if quicksilver be rubbed on the surface of the metal before packing the rubber.—*Dental News*.

## JAMAICA DOGWOOD VS. CATAPHORESIS.

In a running discussion on cataphoresis in the Pacific Coast Dental Congress, Dr. J. D. Hodgen, as reported in the *Stomatological Gazette*, says: Fluid extract of Jamaica dogwood has been in my hands a medicament for which I am very grateful, used in twenty and fifty minim doses. When it does have its best effect, I would not trade an ounce of the fluid extract of Jamaica dogwood for a wagonload of cataphoric apparatus. That is saying a good deal when every one who knows me knows I am wedded to cataphoresis. When it does take effect it is almost immediate, and we have no trouble; can work right along, knowing that our patients are not being tortured by the operation. I have a family of patients, and before I learned of this dogwood, I would rather see most any man come to my office with most any kind of a bill than one of these patients It was with perfect dread that I saw them. I actually sent two or three of them away; I could not work for them. With this drug I have been enabled to work for the entire family, and one girl had the impudence to go to sleep while I was excavating her tooth. I have found that there are cases where it will not work. When it does, it works most beautifully.

## THE SIN OF WORRYING.

It is care that kills. One who deliberately cultivates a disposition to throw care to the winds soon becomes an indispensable person to his friends. Care is worry, pure and simple. The burden that causes us to worry is heavy enough to bear, in all probability, without adding to it that of all-engrossing care. which never lets the mind rest for an instant. Suppose you do "have troubles of your own." Can you cure them by worrying? One's best effort to overcome the trials and tribulations of this life is all that is demanded. If that effort surmounts the difficulties, well and good. If it fails, the fret that wears wrinkles in one's soul, the worry that makes us hated by our friends, the care that wears deep furrows on the brow do not help one out of the slough of despond, but rather bury us the deeper. The world gets very tired of men and women who placard their woes on their faces and moan it in their voices in hourly conversation. But the world dearly loves those people who are merry and companionable, even when grief is gnawing deep. We owe something to society, to the world of people about us, and have no right to make ourselves public nuisances because the clouds obscure our sun.—*Washington Star*.

## A Vulcanized Finish.

Some things are never old. Here is the way Dr. Steele makes a rubber-plate with a vulcanized finish:

A nice way of preparing plates to come from the flask clean and smooth, and ready for pumice and final polishing, is to be sure and get a perfect, smooth cast. Make your model plate of paraffin and wax. After the teeth are mounted correctly, shape the gums and plate just as you would have it for the mouth; then after trying it in the mouth to make sure it is all right, place it back on the model and flask as usual. When the flask is opened, place both parts in boiling water, and with an atomizer tube go over all the joints and pins, thoroughly washing out all the wax. Take the flasks out of the boiling water, and immediately coat both the model and the lingual surface of the plate with a varnish made from pure liquid silex, to which has been added enough fine, pure powdered tin to make it give a good, metallic coating. Then set the flasks in the air a few minutes till the varnish is set. Now lightly coat both varnish surface with soap to prevent the metal coating from adhering to the vulcanized plate. On opening your flask the plate will come out clean and smooth, requiring but little work to finish.—*Dental Weekly*.

## Vertical Pin Teeth the Stronger.

I want to speak of the use of teeth with vertical pins instead of horizontal. I think the former are from four to ten times as strong as the latter. I have noticed that in nine cases out of ten the pins are horizontal. I notice that I have less breakage since I adopted the vertical pins —Dr. Thompson, *Items*.

### LIBERAL CUTTING ESSENTIAL.

Never fill upon the approximal surfaces without cutting through upon the occlusal and trimming all weak walls that mastication is sure to break away, and when both approximal surfaces are involved to make a triple compound filling. Do not fear the cavities cannot be shaped to hold the filling.—W. G. A. BONWILL, *International.*

### HOW TO SET CROWNS AND BRIDGES SO THAT THEY MAY BE READILY REMOVED.

The post (which should be unnotched and tapered) and the underside of the cap is coated with a film of thin sandarac varnish ; this is allowed to thoroughly harden, and the crown is then set with cement, as usual. This thin film of varnish, while in no wise lessening the security of attachment, upon heating, softens and breaks the adhesion of the post and with the cement, allowing the crown or bridge to be readily removed.—J. E. NYMAN, *Review.*

### THE VALUE OF PLUS CONTOURS.

Until greater contours (what I call " plus contours") are made, no approximal fillings are safe from subsequent caries. This can only be done by taking more time to gain space on interproximal walls, by wedging with gutta-percha for weeks and months, and then, when amalgam is more thoroughly understood, and ability is acquired to pack it, and when gold is used less on all teeth posterior to the cuspids, will there be an advance in this line, more teeth saved, and fewer of the detestable gold crowns and bridges used.—W. G. A. BONWILL, *International.*

### A CHEAP METHOD OF CROWNING.

Loop a platinum wire round the root and take impression with loop in position, cast in plaster and remove impression material; fit a plain backed tooth to model, squeeze the pins to loop, invest and solder with silver solder. Clean and replace on model, then build up masticating portion of crown with amalgam, forcing the amalgam well down into the root, polish when hardened. Roots too badly decayed to crown by any other system can be saved by this method. DR. BARNES, Leghorn, Italy.

### VARNISH FOR CAVITY.

Dissolve some copal in equal parts of alcohol and chloroform ; add one equal volume of hydro-napthol, and the product will be a very adhesive and strongly antiseptic varnish, free from all caustic properties.

### REMOVAL OF BROKEN NERVE BROACHES AND DRILLS FROM ROOT-CANALS.

Some months since, while using a Gates-Glidden drill for enlarging the orifice of root-canal for treatment in a superior cuspid, the blades of the drill caught and cut a screw-thread in the tooth tissue, and the shank was twisted off instantly. I knew it was no use to drill by the side to remove it.

The cavity was treated with a small pledget of cotton wet with fifty per cent. sulphuric acid, sealed with gutta-percha for three or four days.

Next sitting, opened up cavity, found it filled with black oxide of steel, rinsed out, no discolor to dentin.

Found that a fine broach would pass by the drill. I gave another treatment. At next sitting the steel came out readily by the use of a Donaldson root cleanser.

Canal in fine order and not discolored.

Second trial is all I have had occasion to make. A barbed nerve broach gave out in the canal. No great effort was made at the time to remove it. Gave same treatment.

Next sitting pyrozon, three per cent., was injected to cleanse the canal, and to my great delight the broach appeared with the foam. In either case the steel showed but slight change, except in color.

This may be new to some others as to myself. I do not recollect of its being reported. All I claim for it is, that it has served me well in two cases.—S. B. PALMER, in *Dental Weekly*.

### ANNEALING GOLD.

You will never appreciate the true working qualities of cohesive gold until you quit passing it in the flame of the lamp. Use a sheet of mica or an annealing tray. Don't be penurious. The good effects will pay for the difference.—W. H. WEAVER, in *Dental Weekly*.

### ADD POTASSIUM SULPHATE TO INVESTING PLASTER.

Plaster investments, with potassium sulphate added, stand high temperature with less cracking than investments without it.—J. E. NYMAN, *Review.*

### IMPRESSION MATERIAL FROM WHICH A DIE MAY BE CAST STRAIGHT.

Plaster, 1 qt. ; pumice stone, powdered, 1 pt. ; chalk, 1 pt. Mix and use same as plaster.—*Dental Weekly.*

### DR. CLYDE PAYNE'S OBTUNDENT.

Dr. Clyde Payne recommends in strong terms a combination of carbonate of potassium, cocaine, carbolic acid and glycerine, as follows: Make a saturate solution of carbonate of potassium and glycerine, then a saturate solution of cocaine and carbolic acid and mix the two together on a warm glass slab. After drying the cavity thoroughly with alcohol and hot air apply a drop of the obtundent and continue the blast of hot air for five minutes. Dr. Payne states that with this remedy properly applied he is able to obtain better average results than with cataphoresis.

### LOCAL ANÆSTHESIA WITH EUCAINE "B."

Instead of one per cent. I employ a two per cent. solution ; this is absolutely free from danger, and permits operation to be undertaken very quickly. Analgesia sets in immediately, and there is no necessity of waiting for five minutes, as is the case of the weaker solution. This is no slight advantage for the patient. Further, we can operate in the upright position without the least fear of trouble, and we can allow our patient to walk out immediately after the work is done, which is not possible with cocaine.

The following points seem to me to be important enough to attract the attention of stomatologists: Without going into the technique that is to be followed in order to obtain analgesia, I will say that the injection of 1 cubic centimeter (17 minims), *i. e*, 2 centigrams or $\frac{1}{3}$ grain of eucaine "B" is sufficient in the majority of cases to permit the extraction of a large-sized molar without the patient suffering any pain. If this dose should appear insufficient, there need be no hesitation in injecting a larger quantity of the anæsthetic solution. Immediately after the injection is made the forceps can be taken and the tooth removed. Dr. Dumont and I have operated over sixty times by this method, and our patients have never experienced any pain.

## PLASTER FROM HANDS.

In removing plaster from the hands after the application of plaster casts, it would be well to remember the fact that syrup of lime is the strongest solution, and that the application of a little sugar to the hands will greatly assist you. The same rule applies to the removal of casts.—*Ga. Jour. of Med. and Sur.*

## OXIDE OF ZINC AND EUGENOL.

Using a good article of zinc (Hubbock's) and as much of it as the eugenol will take up without becoming crumbly, a filling can be inserted that will last as long as the best cement. It is valuable as an intermediate stratum on the floor of deep cavities, and as a covering to dressings, especially where it is desirable to avoid pressure, and as a filling where a non-irritating thermal protector and antiseptic is desired. In proximal surfaces of molars and bicuspids it shows no wasting for one, and, in some cases, two years.—S. BLAIR LUCKIE, *Items.*

## A NEW COUNTER-DIE

A few weeks ago I had some trouble when making a seamless crown in using lead as a female die, as the lead stuck to the crown badly. I wondered how modeling composition would work. I took some quick hard-setting composition and warmed it as usual. I then forced it in an old brass bell and forced the zinc die into it and cooled under water. I think it better than lead. I have used it several times with success.—J. T. WHEELOCK, in *Brief.*

## EASY METHOD FOR THE REMOVAL OF FOREIGN BODIES FROM THE NASAL CAVITIES OF CHILDREN.

According to Dr. G. Bieser the employment of the usual methods for removing foreign bodies from the nasal cavities in struggling children and without anesthesia is attended not only with the dangers from traumatism, but also with difficulty and occasional failure. The employment of aero-dynamics may overcome these objections. The method advised by the author is as follows: The child is placed in the ordinary position for intubation, the assistant holding his hand tightly over the child's mouth; one end of a piece of rubber tubing is snugly inserted in the nostril opposite the one holding the foreign body, the other is inserted into the operator's mouth; the operator then blows suddenly and vigorously into the nostril and dislodges the offending body. The simplicity, cleanliness and efficiency of this method are apparent, the child's struggles causing no traumatism.—*Pediatrics*, July 15.

### "DEATH TO CORNS."

| | | |
|---|---|---|
| R. | Ext. of cannabis indica | 1 |
| | Salicylic acid | 10 |
| | Oil of turpentine | 5 |
| | Glacial acetic acid | 2 |
| | Cocaine (alkaloidal) | 2 |
| | Collodion | q. s. ad 100 |

M.

Apply a thin coating every night, putting each coating on top of the preceding one, until finally the whole drops off, bringing the indurated portion, and frequently the whole corn with it.—*National Druggist.*

### A COMMON OCCURRENCE.

*Do you recognize* the following remark? "*One of the fillings you put in for me two or three months ago has come out.*" Upon examination it is found that your fillings are all in place; that instead of a filling having "come out," that it is a new cavity in the opposite approximal surface which causes the complaint. Examination of your record also proves that the work was done two or three years ago, instead of "two or three months." When all this is explained, the patient with child like blandness will exclaim, "Is that so? Why, I thought sure it was one you filled," and, "Well, well, can it be possible it was so long ago? You told me to come every six months, but I forgot it." Then it is that visions of the scores of times the urbane patient has spoken of your "failure" to friends will vex your soul and you know that no correction will be made. Have we overdrawn the picture? Not on your sublunar existence.—*Dominion Dental Journal.*

## NEW USE FOR CARBOLIC ACID.

[Reported by M. H. Leaver, '99.]

This summer I had occasion to take an impression for a lady with a very irritable palate. Every time the impression cup was inserted it brought on a fit of gagging. There was no camphor water at hand nor a drug store near. What to do I did not know. On running over the contents of my medicine case, among other drugs, there was an aqueous solution of carbolic acid, 1 to 40, which had been used to syringe out tooth sockets after extractions. Knowing that carbolic acid possessed anesthetic properties, I took about half an ounce of this solution and flavored it with a drop of clove oil, and requested the patient to rinse the mouth thoroughly with the mixture. The impression was then taken without any sign of gagging. This may be nothing new, and it may not work in all cases, but it is given for what it is worth.—*Penn Journal.*

## NITRATE OF SILVER IN ALCOHOL

In the following I will give to the profession my practical experience with the above solution, which for a number of years I have used successfully for various purposes.

Dissolve five to six grains of nitrate of silver in one third to one-half ounce of absolute alcohol, keeping it well stopped and away from the light. A very healthful remedy it is in certain cases of diseased gums, as gingivitis, pyorrhea, alveolaris. Apply it with shreds of cotton on an old broach or properly-shaped orange wood, carrying it to all parts. As a standby I apply it to small cavities at necks of teeth which are especially sensitive to touch. Dry same well, and after use, follow with a solution of common salt. In the treatment of temporary teeth, which are either deemed not best to fill, or in which the tender age of the patient makes any other application impossible, its use is to be recommended.

Sometimes the remedy is very useful in devitalizing stubborn nerves. On an old broach, with some shreds of cotton, I push it slowly toward the apex of the canal, and usually I am able to remove the pulp painlessly in a few minutes.

Having, in short, indicated the preparation and application of this valuable medicine, I would at the same time advise judgment. Being a powerful caustic, nitrate of silver may cause much pain and soreness in an unskillful hand.—DR. T. F. DRISCOLL, Corsicana, Texas.

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# SOME POINTS KNOWN ABOUT AMALGAM.

By Theodore F. Chupein, D.D.S., Philadelphia, Pa.

Dr. Wm. H. Trueman writes us as follows:

| | | |
|---|---|---|
| Silver | 68 | parts. |
| Tin | 25 | " |
| Gold | 4 | " |
| Zinc | 1 | " |
| Bismuth | 1 | " |

When this alloy was first cut, it became unworkable *in two minutes*, unless made quite mushy with mercury, and even then, set so rapidly that one had to "hustle" to complete the filling. After *annealing* the shreds in the kitchen oven, over night, the same alloy takes about *an hour to get as hard* as it previously did in two minutes, owing, no doubt, to its having been annealed at too high a heat. During the night the fire became much hotter than was anticipated, so that by morning, and perhaps for some hours before, the jar containing the shreds was too hot to be handled by the naked hand. After the lapse of a month, this same alloy, in a measure, regained its quick setting properties, gradually hardening in less time, but still far less quickly than at first. Another lot of alloy, with a much larger proportion of Tin, beside it the whole time and subject to the same conditions, was not appreciably changed in regard to its time of setting.

A dentist, recently, who was in the habit of making his own alloy, made up a lot by his favorite formula, Silver 60 and Tin 40. After cutting it he placed it in the kitchen oven to anneal as he had been in the habit of doing, but this time forgot it, and shortly after his wife did the family baking without disturbing the jars in which the alloy was placed. The next day he remembered his alloy, and found it apparently all right, but to his surprise amalgam made from it showed no sign of setting *twenty-four hours* after making the mix.

When the fillings or shreds of an alloy are annealed to a heat of

200 or 212 degrees of heat for a short time, say one half hour, it does not appear to affect the amalgam to any perceptable degree, but where the heat is carried to 330 or 340 degrees and the cut alloy held at this temperature for ten or twelve hours, the annealing produces a very marked change in the amalgam.

If we take as a starting point 50 parts of Silver and 50 parts of Tin, by increasing the Silver and decreasing the Tin, the resulting alloy becomes quicker setting, so that by the time we reach 70 parts of Silver and 30 parts of Tin—or 80 parts of Silver and 20 parts of Tin, using the alloy without annealing, or annealing it for only a half hour at 200 degrees, these proportions of the two metals named produce an amalgam setting so promptly that it would task a very quick operator to make use of it before it became so hard as to be unworkable.

On the other hand, using 40 parts of Silver and 60 parts of Tin, good filling may be made two hours after the shreds of such an alloy have been mixed with Mercury, and this, too, even after as much Mercury as possible had been expressed by strong pressure through Chamois skin. We are suspicious, however, of such formula, for although the amalgamation be very prompt, and the resulting mass smooth, we would fear the ultimate shrinkage of such fillings.

The subject of amalgam and its behavior as a material for filling teeth is invested in considerable doubt and speculation despite the endless experiments which have been made with it. All experiments should be conducted with a view of establishing *positive facts* regarding it. There are so many circumstances to be taken into consideration that to establish these facts requires the most varied thoughts. If we had but *one* metal to deal with, the subject would be simple enough, but when *two*, *three* and *more* metals enter into the composition of an alloy, the subject becomes complicated, is invested with many side issues, which grow in geometrical progression.

Witness the innumerable and endless melodies which are formed from the five tones and seven semi-tones of music—twelve sounds in all—yet musical composers have, and ever will have, an endless variety of airs to glean from those twelve sounds.

### GOLD.

The addition of a small proportion of Gold in an alloy—not more than 3 or 5 per cent. of the weight of all the other metals—secures the amalgam from discoloration, provided no copper enters into the formula. Gold lessens the liability of shrinkage, causes it to set rapidly and makes the mass smoother and more homogeneous.

Five per cent. of Gold, 60 per cent. of Silver, and 35 per cent. of Tin will make an alloy that will neither shrink, expand nor discolor, and will set very rapidly.

### SILVER.

When an alloy contains a large portion of Silver it may be used more plastic and with less squeezing through Chamois skin to expel the excess of Mercury. The more Silver an alloy contains the more Mercury it requires for amalgamation. Although it has an affinity for Mercury, it has not near the same affinity which Tin has. If Mercury be added to the shreds or filings of Tin, the amalgamation is very prompt, almost without the use of the pestle to force the amalgamation; but when Mercury is added to Silver it requires considerable and hard trituration in the mortar, with the pestle, to bring about their amalgamation. When Mercury is added to Tin it forms an amalgam which takes a long time to get hard, and which shrinks at least 40 per cent. If Silver be treated in the same way it expands about 60 per cent. on amalgamation and hardens promptly. Thus we see that if we make use of the shrinkage of Tin and the expansion of Silver we obtain a mass where the one attribute overcomes the other, and we obtain an alloy which neither shrinks nor expands. Silver gives hardness or density to an alloy. When the filings or shreds of an alloy amalgamate promptly it should be looked upon with suspicion, as such an alloy may contain a greater proportion of Tin than it should have. The nearer we approach to 60 parts of Silver and 40 parts of Tin the closer we approach to a reliable alloy. It is better to use more labor with the pestle to force the amalgamation than to have the alloy amalgamate too easily, for this proves there is the requisite quantity of Silver in the alloy. This, however, is not always the case, for a slow and difficult amalgamation may be also brought about by the addition of 5 per cent. of Zinc. Silver is the most important metal of an alloy. It gives the hardness. It hastens the setting. It requires more Mercury to bring about amalgamation and may be used in a more plastic condition. Tin may be termed the flux or menstrum for Silver.

### TIN.

When Tin is largely in excess in an alloy all the Mercury possible should be expressed from the mass and the amalgam used as dry as possible, since Tin retards the setting. Tin has a violent affinity for Mercury. Tin after amalgamation with Mercury contracts or shrinks nearly one-half its bulk. Tin is the next most important metal in the formation of an alloy for filling teeth, and acts as an intermediary to Silver.

### ZINC.

The introduction of Zinc in an alloy serves to make the resulting mass keep its color. This it does, but not as well as Gold. Zinc is sometimes introduced to cheapen the alloy instead of using Gold, and to combat the discoloring effects of Copper. It does not add edge strength, and if used in large quantities renders the alloy harsh, crumbly and difficult to amalgamate. To a certain extent it prevents shrinkage.

### COPPER.

As one of the components of an alloy, Copper in the proportion of 1·20 of the entire mass of Silver seems to give the incorporated amalgam a fine grain and hastens the setting, permitting the amalgam to be used more plastic. It imparts density to the amalgam, is compatible with tooth tissue, but will cause discoloration.

### PLATINUM.

Many dentists regard Platinum as a useless or inert metal in the formula of a dental alloy. Thomas Fletcher, however, regards this otherwise, and founds his opinion on the inability of incorporating Platinum with other noble metals by the ordinary mode of fusion. By adding a little Tin to either Platinum, Gold or Silver, in an iron ladle, with ordinary heat, Platinum, so refractory to heat (except the heat of electricity or the heat of the Oxygen and Hydrogen blowpipe), is readily taken up and intimately incorporated. The great heat necessary to fuse Gold, Silver or Copper render these metals homogeneous in the same way, that is, by the addition of a little Tin, in an iron ladle over an ordinary coal fire. But while Mr. Fletcher indicates how Platinum may be intimately incorporated with other metals, we do not recall where he gives the part which Platinum plays in an alloy.

These are the metals which most generally enter into the formulas of alloys. To sum up these attributes briefly:

*Gold* sustains the color, hastens the setting, lessens the liability of shrinkage and makes the mass smoother.

*Silver* hastens the setting, gives density, expands, requires more Mercury for amalgamation, and enables the mass to be used more plastic.

*Tin* retards the setting, assists amalgamation and contracts.

*Zinc* is said to help keep the color of amalgams, but is often used in place of gold to cheapen the alloy. In large quantities it retards amalgamation and produces harshness.

*Copper* makes the mass smooth and of fine grain, hastens the setting, permits the amalgam to be used more plastic, imparts density, is compatible with tooth tissue, but produces discoloration.

*Annealing* alters the working properties of alloys.

With these points brought to our attention we see the necessity of using an alloy of which we know the component parts, since an alloy with a large portion of Silver will set quickly, while one with a large portion of Tin will set slowly.

In this way, when an operator has used an amalgam which he finds to have yielded him good results, he should continue to use the same, or make up the same for his use; or if he be too much occupied to do this, or have not the facilities, he should employ some reliable party to do it for him.

Too little attention seems to have been given to the very different manipulation required by different alloys. An alloy with Tin in excess—in proportion as this metal predominates, less Mercury should be left in the mass—such an amalgam is better worked, as we say, dry; and may be best packed with a burnisher. If Silver predominates, it may be worked more plastic. Again, in observing the behavior of amalgam, time is an element not to be lost sight of. We may see a filling a few weeks after its insertion that is perfectly satisfactory; edge and color all that we desire. It may be the same a year after, and yet later it may show imperfect edges or be unsightly in color; it may have badly stained the tooth; it may have done one or all of these things from changes not at all observable until after the lapse of some years; changes, too, which no scientific experiments enable us to anticipate.

Again, it has been said that the very best alloys will yield different results accordingly as they are manipulated: thus Dr. Bonwill obtains good results by expressing the superabundant Mercury from the amalgam while in the cavity of the tooth through Bibulous paper. Another operator insists that the Mercury should be incorporated with the filings of the alloy by hard trituration with the pestle in the mortar. Still another held that this could be as well and adequately accomplished by the finger in the palm of the hand. Fletcher argues that the filings and Mercury should be weighed and the Mercury incorporated with the filings by shaking in a glass beaker. Some were for washing amalgams, others were opposed to washing. Some contended against squeezing to express the superabundant Mercury, holding that some of the components of the alloy were lost or carried away with the Mercury that was expressed. Still others favored the squeezing in order to obtain the mass dry, which they held was the only way to use amalgam. Thus in these various opinions uniform results could not be obtained.

## PLAIN TEETH WITH PINK RUBBER GUMS.

By Theodore F. Chupein, D.D.S., Philadelphia, Pa.

We rarely use gum sections, because so much greater artistic effect can be given to sets of teeth made with plain teeth and pink rubber gums. Apart from the perfect articulation which may be obtained with plain teeth, protrusion of a tooth here, the twisting of a tooth in imitation of an irregularity, or to accommodate an irregularity of the occluding teeth, the spacing for better occlusion, etc., etc., make the use of plain teeth with pink rubber gums the most admirable manner of supplying the loss, in full cases, that we know of. Even in the protrusion of the upper gums, when the thinnest porcelain facings would add to the protrusion, pink rubber gums may be made so thin—not more than the 1-16 of an inch thick—as not in the least to puff the lips unnaturally, doing this equally at all parts, not thin at one point and thick, at another as is unavoidable with gum sections.

Objection is sometimes urged to the liability which the red or black vulcanite, of which the plate is made, cropping through on the pink rubber gums and marring the effect. This would certainly be an objection if it could not be successfully combated. The cropping through of red or black rubber on the pink gum facing may *always* be avoided, if the case be first carefully packed with pink rubber, especially between the teeth, as they lie in the plaster investment of the flask, using a thin instrument to pack the pink rubber, (which should be softened on a heated soapstone slab) in these spaces. After the case is thus packed—packing the pink rubber of the gum facing *first*—the red or black rubber is packed *afterwards*, gates for the escape of the surplus rubber having been cut *entirely on the back of the investment, no gates whatever being cut on the front.* The two parts of the flask are now put together and the bolts applied, and the flask immersed in water and permitted to boil at least five minutes. The flask is then lifted out of the boiling water and the *two front bolts screwed down first.* When these are down as far as they will go, the flask is boiled again and the back bolt screwed down. If a case of plain teeth with pink rubber gums be manipulated in this way the red or black rubber of the plate *will never crop through* to deface the gum facing.

Quite an artistic effect may be given to these cases by carving gum festoons, in imitation of the swell of the root of natural teeth as they enter the alveolus. This may be done on the wax, before the case is invested in the flask, or it may be done with a round cavity bur the size of No. 11, (Johnson & Lund's Catalogue for 1896), on the gum facing after the case has been vulcanized. Objection is sometimes urged against this, because in polishing this gum surface, the brush wheels and pumice stone cut away these festoons and thus destroy the labor used in producing them.

This need not happen. If a worn corundum or carborundum point in the hand-piece of the dental engine no larger than the bur used to produce these festoons, be dipped in water, (or the plate dipped in water), and these festoons gone over, an almost polished surface will be left at these points. After this has been done with the ordinary corundum point, these places should be gone over with fine or polishing corundum points; this leaves these places with glistening polished surface, so difficult to reach with the larger brush wheels, so that it will only be necessary to use a little whiting on the fine soft polishing brushes to obtain a perfect finish.

## PAINLESS DENTISTRY.

Dr. Clyde Payne has certainly contributed two valuable formulas towards "Painless Dentistry." He claims even better results for the painless excavation of "Sensitive Dentine" with his Obtundent, than with "Cataphoresis." *His obtundent* is made of carbonate of potassium, glycerine, cocaine and carbolic acid. He makes a saturated solution of carbonate of potassium and glycerine, then a saturated solution of cocaine and carbolic acid. He mixes these two solutions on a warm glass slab. A flat bottle filled with hot water forms a good slab. The rubber dam is applied and the cavity is made as dry as possible by means of absorbent Japanese bibulous paper, absolute alcohol and hot blasts of air with the hot air syringe. A drop of the mixture is now placed in the cavity and the hot air blown on it as warm as the patient can bear. This is kept up for five minutes, after which the tooth can be excavated quite painlessly.

For the painless extraction of teeth he has compounded the following "*Local Anesthetic*": Cocaine, 15 grains; Glycerine, 5 drachms; Nitro-glycerine, 1-10 grain; Morphia sulph., 1 grain; Atropia sulph., 1 grain; Carbolic acid, 3 drops, and distilled water sufficient to make 2 ounces. He says that Cocaine is the basis of all local anesthetics and is a dangerous drug to use, unless its physiologicol action is well understood, consequently the formula is devised with a view of obtaining the best results and of thwarting all dangerous issues. Hence, he says: "There is sufficient glycerine to localize the cocaine, holding it in apposition to the parts a sufficient length of time to complete the operation, and not very long so that it acts as an irritant and causes swelling. The nitro-glycerine is intended to stimulate the heart just in proportion as the cocaine may depress it. The sulphates of Morphia and Atropia overcome the after-pain. The carbolic acid is intended to preserve the solution. In patients who have a poor circulation sometimes there is a swelling with this formula, but it will be painless and will subside as soon as the anesthetic, with which you have infiltrated the tissues, has become absorbed." The anesthetic figures a one-and a-half per cent. solution of cocaine, and the solution or formula was used effectively *nine months* after it was compounded, Implantation can be made with this Local Anesthetic painlessly. He uses it effectively by rubbing on the gum before adjusting a clamp which may impinge on the gum.

In using the hypodermic syringe, the needle should be introduced into the gum tissue horizontally, that is, pointing towards the back of the mouth. It should never point against the bone. The needle should be forced in, in the direction stated, about a quarter of an inch, and the point of the finger of the left hand pressed on the gum where the point of the needle is. Pressure is now made on the piston, while the finger presses the gum. The anesthetic is thus forced into the gum, which when effective assumes a whitish appearance as well as swelling up and forming a "weal," varying in size from a ten cent piece to a quarter of a dollar. Considerable force has to be used on the piston to make the anesthetic infiltrate into the tissues and produce the anesthesia. If the liquid is passed through the syringe, emptying it with little force, no effect will be attained; under such circumstances the gum will not be blanched and the weal will not be formed. It is, therefore, necessary to obtain the local anesthesia that the liquid should be forced into the tissues slowly, forcibly and drop by drop.

# REPORT OF THE PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS.

By Theodore F. Chupein, D. D. S., Philadelphia, Pa.

A very interesting talk was held on " Enamel Fillings" by Dr. Jos. Head The first effort was the obtaining of space. This was effected in the usual manner of separating teeth for any kind of filling material. Dr. Head did this by inserting pieces of tape between the teeth. These were increased in number and inserted, either by himself or the patient, until six or eight thicknesses were introduced between the teeth to be filled. The space secured, the preparation of the cavity was the next step. This was done by means of round cavity burs in the dental engine, avoiding all undercuts.

The margins of the cavity were prepared with fine cut burs, or with small fine corundum points.

The cavity was prepared without the application of the rubber dam, the parts being kept dry by the insertion of napkins, the insertion of cotton rolls or with wads of Japanese bibulous paper. The cavity should be cup-shaped. If the decay were excessive, so that undercuts would be unavoidable, the cavity could be filled with cement and a new cavity, without undercuts, made into this.

A piece of platinum foil a little larger than the area of the cavity is cut and laid over the cavity. This is manipulated with ball burnishers to the approximation of a fit. In forcing the platinum foil into the cavity, it is not important if this be torn or split at the part which touches the floor of the cavity, but it is most important that the edges which define the walls and margins of the cavity should be perfect. The foil used is the one-thousandth of an inch in thickness. The platinum foil may be obtained of any reliable dental depot, but he had found that obtained of the "Baker Company," of Newark, N. J., very excellent. They furnish this in thicknesses varying 1-1,000—1-2,000 and 1-3,000 of an inch, the thicker being used for large and the thinner for small cavities.

The manner of annealing this foil has much to do with the proper forming of the matrix. If annealed by passing it through the blaze of a spirit lamp or Bunsen burner the metal becomes harsh. It should be annealed, either in the muffle of a Downie furnace or a Custer electrical furnace. By these means the metal becomes entirely tractable.

After an approximation to the shape of the cavity is obtained with the ball burnishers, the fit of the matrix is made still more perfect by forcing in pieces of cotton, bibulous paper or soft spunk, so that a perfect reproduction of the shape of the cavity, (which, although being made slightly conical, should have perfectly sharp parallel walls) is obtained. Sometimes the matrix will adhere to these last materials and will come away with them perfect in shape, but if not, it must be lifted out carefully and laid on the table in the same position that it occupied in the cavity, in order when re inserting it, it may be replaced in its exact position.

The matrix is now filled with tooth body, not full, but nearly so.

This body is mixed with distilled water and placed in the matrix a little at a time. Should the shade not be exact it can be made so by the addition of one or other of the powdered porcelains.

Dr. Head does not rely on a low fusing tooth body, but on one requiring a high heat. He says the filled matrix may be fused in a Downie furnace, although he uses an electrical furnace devised by his brother and himself on the principle of the Custer electrical furnace.

The partly filled matrix is first dried out of all water, and when fused is reapplied to the cavity, when its edges are reburnished in the closest approximation to the edges or margins of the cavity, after which it is again lifted out and filled with more body until the contour is restored.

It is important to have this correct, as the gloss of the fused tooth body assimilates nearer to the gloss of the enamel than if the filling is ground to its contour and afterwards polished. This may be done, but the effect is never so perfect as when the proper amount of material is used so as to avoid subsequent grinding.

Dr. Head prefers to use platinum for these matrixes, instead of gold foil, first because it is equally malleable and tractable, and secondly, because there is no danger of melting when the high fusing bodies are used. He attaches importance to the use of these high fusing bodies, as they seem stronger than the bodies which fuse at 2,000 degrees or lower, as also that there is less variation in the shades.

After the body is mixed and put in the matrix, the excess of moisture may be absorbed away with blotting paper and further dried with careful blasts from the mouth blow pipe until it becomes like putty. It is then conveyed to the furnace and heat applied until the baked body assumes a gloss. When cold it is tried in the cavity and any addition necessary to restore the contour is noted. It is lifted out again and the addition made and re-baked. It is rare that three or more than three bakings are required.

Small fillings can be removed from the furnace almost immediately after fusing, as they quickly cool: it is only large fillings or corners that require a longer time to cool.

Very small fillings are troublesome; those the size of a duck shot or no smaller than a No. 6 bird shot should be attempted.

After the baking is completed the platinum foil is pulled off, doing this by peeling from the circumference to the center.

To adjust the filling the rubber dam is applied and the cavity made perfectly dry, when undercuts are made around the borders of the cavity. The filling is roughened, where the platinum foil was pulled off, so as to afford the best adhesion of the cement to it. This roughening may be made with small diamond disks.

Dr. Head uses the Harvard cement (but any good cement may be used) for securing the filling in place, which mixes to a creamy consistence. A little of this is plastered in the cavity and the filling is picked up with the spatula, on which a little of the cement is adhering, and pressed in position.

Labial cavities in the incisors, cuspids and bicuspids are the most favorable localities. He rarely attempts any filling farther back than the distal surface of a second bicuspid.

The corners of incisors may be restored with fillings of this kind successfully and strongly, thereby preventing the unsightly display of gold in the front of the mouth.

The rubber dam is kept in position until the cement has thoroughly hardened. Before removing it the filling and all the margins should be coated with melted parrafine, so as to prevent the moisture from affecting the cement before thorough crystalization is attained.

The edges of these fillings may be polished the next day by means of fine sandpaper disks, the separation being still kept up so as to afford ready access to the parts.

When these fillings are put into place they should be pressed well home, as there is a certain elasticity in the cement which would cause it to protrude beyond the margins of the cavity if this elasticity were not overcome by strong pressure on the filling to force it into place.

Dr. Keyser showed a convenient little instrument—a rivet sprig—an instrument much used by jewellers and watchmakers. With it a neat head could be put on any piece of wire in a few moments. The end of the wire was fused to a ball. It is then passed through the hole in the rivet sprig and hammered flat with the rivetting hammer.

Dr. Chupein said that he had obtained excellent results with Dr. Clyde Payne's obtundent. This consisted of a saturated solution of

Cocaine in Carbolic acid, and a saturated solution of carbonate of potassium in Glycerine. These two solutions are mixed, a pledget of cotton soaked with it and placed in the previously thoroughly dried cavity—by means of the hot-air syringe or heated chip blower a constant hot blast was kept up on this cotton for five minutes, when the dentine was rendered insensitive. He had found, however, that it was difficult to vaporize the glycerine, and he had resorted to the addition of a little Ether to assist this, placing a drop of each saturated solution in close proximity on a glass slab; he added a few drops of Ether to these, and when they were all incorporated, he dipped the cotton in the solution and applied it to the cavity. The addition of the ether assisted very materially in the cataphoric action, and also in vaporizing the glycerine.

Dr. Trueman showed a plan for making and contouring gold crowns from a single piece.

The mode of procedure was as follows:

The root end was prepared in the usual manner and the measure taken with the "dentimeter."

A thin copper band was fitted to the root end and wax placed in this and the patient made to bite into the wax. The band and wax were now carefully removed and a crown shaped from it. This was now placed in some mouldine so as to halve it, and plaster poured upon it. When this half of the matrix hardened, the reverse was poured so as to obtain a fac simile of the wax tooth and copper band. This being removed from these sectional impressions, a plaster tooth was filled into the matrix. This plaster tooth could be carved into shape better and with more facility than the wax one. The plaster tooth being formed, it was sunk half way into mouldine and fusible alloy cast on it. Turning this over and painting the metal with whiting and water, more fusible alloy was cast in a cold or mushy condition so as to make a reverse.

The next procedure is to make a cartridge. This is formed of a disk of metal, round in shape, an inch in diameter and 28 gauge thick. It is formed into a seamless cartridge by driving successively smaller punches into it until the metal is formed into a cartridge. This manipulation is continued until the size of the cartridge corresponds in size to the root end, which it should fit. The cartridge is now placed into the fusible alloy matrix and fine shot is dropped into it. A punch is tapped and driven against the shot and the contour of the crown obtained by this tapping and driving. It is well to practice the method at first with soft brass or copper plate until one becomes familiar with the manipulation. It is necessary to anneal the metal frequently as the contour is obtained. In working the plan with gold, 22k. should be used, and on annealing it, great care should be exercised to remove all the shot, which is apt to adhere to the gold, and is often driven into an almost solid mass. Of course, if any lead adheres to the gold, and this be annealed, the gold would be ruined.

## SELECTED ARTICLES.

### THE PULP-CANAL QUESTION.

We commend the following paper by Dr. F. B. Darby, of Elmira, to the careful perusal of our readers. It is the most common-sense view of this extensively written and discussed subject which has been presented for many years.

Perfect cleanliness is the *sine qua non.* The house maid who carefully scrubs every nook, corner and crevice of the apartment (even if she do this with Schuylkill water) effects a more thorough antiseptic condition than if the most liberal supply of disinfectants and germicides were used, not excepting the nauseous Iodoform.

The paper was read before the "Thirtieth Annual Convention of the Sixth, Seventh and Eighth District Dental Societies of the State of New York," reported in the *Dental Cosmos* for February, 1899.—Ed.

### SUMMING UP OF THE PULP-CANAL QUESTION.

No operation in dentistry is so diversified as the treatment of pulp canals. It is supposed that every man has a reason for the faith that is within him, and every dentist will undertake to explain and defend his "*modus operandi*," but nevertheless this infinitesimal cavity that plays so important a part in the comfort and welfare of the tooth has always been a victim of eccentricities, ignorance, experiment, and nonsense.

If one will follow closely the journals of the day, he will be impressed with the fact that no one system has been adopted that may be considered universal, or even regarded as standard practice. There has been a revival of the subject during the past year; the journals have been unusually full of it, writers have expressed their individual opinions freely and told the "best way" to treat pulp-canals.

After reading consecutively twelve articles from the pens of as many different authors who trod the pathway from mummifying pulps up to a scientific and rational treatment, it was suggested that a little time spent in assorting, throwing out the worthless and holding on to that which was good might possibly result in creating a system which could be safely adopted, at least by the non-investigating dentist who is not quite satisfied with present results, but still has not the time or inclination to pursue the new radical methods, such as the chemico-metalic, of Dr. Weld and others.

It is not the purpose of this paper to criticise the methods of individual practitioners. It would take too much time, but I do want to extend my sympathy to the man who can find nothing better than iodoform, with its vile, penetrating odor; or the man who believes that in "union there is strength," as is verified by his combination of essential oils, escharotics, astringents, germicides, antiseptics, and what nots, six or eight in number, with which he attacks the pulp-canal, when any one of them would answer the purpose indicated.

I regard with envy the man who can successfully drill canals to the apical opening and stop there, but I question the advisability of the average dentist accepting it as a method to be depended upon.

I have no confidence in a method which does not require the rubber dam, for the treatment, whatever it is, must be thorough in every detail; thorough asepsis, thorough drying, thorough filling. I am willing to concede to every dentist the privilege of filling root canals according to his own fancy, with any material he may elect, provided he fills it full, fills it positively. It makes but little difference what the material is, if the treatment is right.

A dentist who has any consideration for his patients' or for his own peace of mind will be very careful about applying arsenic to a living pulp when even slight inflammation is present, and he will be very careful to secure it by positive sealing. If he be a dentist of refined sense of procedure, he will not undertake it with sandarac and cotton; it is too nasty and slovenly, and is not positive. Owing to decomposition, it makes the mouth offensive, not only to the patient but to his friends.

Temporary stopping made of wax, gutta percha, and whiting is always positive, not offensive to the taste or sight, agreeable in every way, easy to introduce and sure to stay.

After arsenic has been applied to the pulp, let it alone; do not be in a hurry; three or four days are usually necessary to prepare it for easy removal. Do not undertake it until disintegration begins, so that the pulp readily loosens its hold upon the walls, and is removed without leaving shreds or dislodged portions clinging.

Now, we come to the treatment of pulp-canals. First, open the chamber thoroughly, then apply sulphuric acid, fifty per cent.; saturate the pulp with it; a single thread of cotton on a fine broach will accomplish this in a few moments; this shrinks the pulp, loosens it from the walls, and adds greatly to the ease and efficacy of its removal. After its removal, apply another small bead of the acid and work the broach upward until it cuts its way the entire length of the canal. This being accomplished, apply a saturated solution of bicarbonate of soda on the same broach, working it well up to the apex, and continue it until all effervescence ceases. Next comes a thorough washing with hot sterilized water, as hot as can be used comfortably.

The canal is now clean and sterilized, and should be filled at once. There is no necessity for further treatment. Many operators, however, follow with an antiseptic before finally drying and filling, but personally, I have sufficient faith in the sulphuric acid. If your conscience or timidity prompts a useless application, for heaven's sake do not resort to iodoform or creosote; let the medicament be a dainty one, that will not offend the nostrils or pollute the operating room. Chloride of zinc will do all and everything that can possibly be expected of any of the vile preparations. Formalin, three per cent., is void of offense and equally effective.

I have been talking to you about a simple case. Now we come to canals having putrescent pulps, or pulps that have not been interfered with by the operator, but from some cause have died.

If the condition presented is simply a dead pulp that has been intercepted before inflammatory action has been established, proceed immediately to open the chamber thoroughly, then wash out gently with warm water to remove all *debris* left by bur or excavator, and proceed exactly as I have suggested in simple cases.

If inflammation has supervened, open the chamber carefully and as thoroughly as existing conditions will allow; then wash out with hot water (not warm) and pyrozone, equal parts. Repeat this operation several times; simply washing out will not answer—it must be prolonged if you are working for results. Handle such teeth carefully; avoid introducing a broach to any depth in the canals. If inflammation has not progressed too far, this simple treatment will give immediate relief, and I need not remind you that the next step in treating cases of this kind is to dismiss the patient for twenty-four hours, and let nature have a chance. Be sure and apply rubber dam at the second sitting, and let it be the first step before washing out with hot water and pyrozone; then apply sulphuric acid as before, and remove what remains of the pulp; continue the use of acid and broach until you have penetrated to the end of the end of all canals. This may require more time than you want to spend, but stick to it—the end justifies the outlay. If you get discouraged, seal up the cavity after applying formalin, three per cent., and give another appointment, but don't forget to follow the acid with soda bicarbonate. Possibly in a very obstinate case you will require three sittings, but these are rare. After the inflammation has subsided there is no reason for further treatment, providing you have gotten the canals open and enlarged as you want them ; the sooner the canals are filled the better. But remember that, before filling, absolute dryness is essential, first with bibulous points to remove excess of moisture, then with hot air or broach. The drying to be effectual must be carried to the point of dessication.

It seems superfluous for me to mention the well-known treatment for alveolar abcess with existing fistula, the prompt and permanent cure of which depends on the thorough sterilization of the fistulous tract, with an agent both antiseptic and escharotic. This is readily accomplished by forcing through the root canals carbolic acid or wood creosote, but in order to do this it is often necessary to enlarge the apical end of the canals, and here sulphuric acid is also indicated, for as an opener it has no equal. After treating a fistula, plug the apical opening, and fill the canals at once.

The application of fifty per cent., sulphuric acid to the teeth may be considered harsh treatment by those who have never tried it, and indeed it is an agent which should be handled with care. Its use should not be undertaken without the rubber dam, and always associated with soda bicarbonate.

In opening small and constricted canals, a small broach should be used, upon which a shread of cotton has been wound to aid in holding the acid. Celerity is necessary in introducing it, least it destroy the cotton and the little bead of acid drop from the broach and leave a lasting mark should it overreach the rubber dam. If sulphuric acid will not open a constricted canal, nothing but a drill will, and usually a drill will not!

A word about drying canals: don't spend your time blowing hot air into a canal until you have first removed the surplus moisture by bibulous points, and I would advise you after employing hot air, hot broaches, etc., and are quite sure the canal is dry, to introduce a fine bibulous point as a test. It will often demonstrate to you that your efforts with heat have not been successful. Bear in mind that absolute dryness is essential to success, as I have said before—dryness that is so dry that it sterilizes. I believe that if every medicament were taken from us, it would be possible to successfully treat pulp canals with bibulous points and a red-hot copper broach alone.

This treatment which I have gathered and adopted is not original, neither is it the result of hasty observation drawn from journals, but is the result of careful reading and experiment, and based upon daily practice and founded upon common sense and a belief that it is sound and scientific. I am free to acknowledge that in twelve months I have had two failures, but these were due to the operator rather than the method. You know that we are sometimes overcrowded and get to doing things hastily, and the temptation to come a little short of the apex gets the better of us, and we make failures just when we are within an infinitesimal distance of success.

## GUAIACOL AS A LOCAL ANESTHETIC.

By Dr. A. O. Hooker, San Jose, Cal.

As time wears on we are making many important discoveries in dental medicine, and learning much of renewed interest about some of the remedies which we already have at our command.

Pure guaiacol is in the form of hard white crystals, but, as generally sold to the trade, it is a clear, colorless, oily liquid, with sweetish, burning taste, pungent odor and very inflammable. It is the active principle of creosote, of which it forms from 60 to 90 per cent. It is a powerful disinfectant and germicide, and for dental uses is of great value.

As an obtundent for sensitive dentine I believe it to be fully equal to cocaine. Placed in a sensitive cavity of decay and thoroughly dried by the use of the hot-air blast, it will penetrate far into the tubuli and render subsequent excavation almost painless.

When preparing cavities on the labial surfaces of the incisors and buccal surfaces of the bicuspids, extending well up under the gingival border, a drop of guaiacol placed thereon will enable the operator to tie ligatures or force the gums out of the way with little or no pain. It is also a good styptic, and in those cases just mentioned aids materially in arresting any hemorrhage which may follow.

As a disinfectant and germicide guaiacol is a valuable agent in the treatment of septic root canals. A little more than a year ago we destroyed the pulp of a tooth by the use of arsenic. Twenty-four hours afterward we removed the arsenic, opened up and washed out the cavity with warm water. We then placed a drop of guaiacol in pulp canal and sealed up with gutta-percha. Thirteen months subsequent to this appointment the patient returned and we found the pulp canal and its contents in a non-septic condition, having given the patient no trouble whatever.

For use hypodermically for the extraction of teeth, guaiacol may be prepared in one to 10 or 20 parts of sterilized olive oil. For this purpose it is safer than cocaine, and can be used in much larger quantities without danger of producing toxic effects.

It will also be found useful in connection with arsenic in the destruction of the pulp of a tooth, allaying or preventing inflammation and pain while the arsenic is doing its work.

There are many other places in the practice of dentistry where guaiacol will be found very beneficial; but we have mentioned a few of them merely to call attention to its beneficent effects as a local remedy.

At the present time the public is looking anxiously to the dental profession for anything and everything which will in any way lessen the pain and quiet the fear of dental operations, and all efforts on our part looking in that direction will surely be appreciated by our patients.—*Pacific Medico-Dental Gazette.*

## SOME USES OF CREOLIN.

By Frank H. Hartzell.

Creolin is described in "Gorgas," but comparatively little is said in regard to its use in dentistry.

A patient, one of the senior men of the Dental Department, came into my hands a few weeks ago with a chronic abscess with a fistula. The tooth was the upper left first molar. It had been filled with amalgam several years ago, and about eighteen months previous to coming into my hands the abscess and fistula first made their appearance. Notwithstanding the fact that there was an abscess, one or two of the roots were very sensitive, and an application of arsenic was made. The arsenic was removed in due time and antiseptic dressings put in the root-canals, after removal of the pulp. The tooth had been treated for eighteen months or more with carbolic acid, creosote, iodoform and possibly other remedies.

When the case came to me, I cleaned out the root-canals, washed them out with hydrogen peroxid, then put in each a dressing of creolin on cotton. The cavity was filled with gutta-percha, and in a few hours' time pus discharged from the fistulous opening. The pus was expressed by slight pressure. The gutta-percha filling still remains, and the tooth is perfectly comfortable. The fistula closed very soon after the application of creolin. Creolin is said to be a most powerful germicide, and its value in the treatment of such cases seems to be clearly demonstrated.

In cases of extirpation of the pulp, if you make an application of creolin after removing the devitalizing agent, the pulp and the root-canals will be in a thoroughly aseptic condition. Recently I made an application of arsenic for five days; after removing it, I made an application of creolin, followed by one of glycerine and tannin. Each was allowed to remain a few days. It was a genuine pleasure to take the pulp out of that tooth. It came out in a mass, was tough and resembled muscle. I filled the root canal immediately with most satisfactory results.

### RECAPITULATION.

1. Where we have an abscess with fistula, seal the creolin in.
2. Where we have putrescence in root canals and no abscess, do not seal it in tightly.
3. To insure a thoroughly aseptic condition of root-canals, make an application of creolin after removing the devitalizing agent. The roots of such teeth should be filled immediately after the extraction of the pulp.—*Penn Dental Monthly.*

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## PLASTIC FILLING-MATERIALS.

On Thursday evening, March 3, the Edward C. Kirk Dental Society enjoyed one of the most pleasant meetings of the year, Dr. H. H. Burchard, of the Philadelphia Dental College, being the speaker of the evening. Dr. Burchard gave a very interesting talk on plastic filling-materials, their physical and chemical properties. He began by saying that the object of a filling-material was to replace the loss of tooth structure, and also to prevent any further decay. In order to accomplish this object a filling should be water-tight, insoluble in the surrounding fluid, and should hermetically seal the cavity. It should be of sufficient hardness, smooth to the touch, a non-conductor of heat and electricity, and of good color. Gold possesses more of these qualities than any other filling-material in use to-day, but nevertheless it is hard to manipulate and finish properly, aside from taking much more time for the operation. For these reasons, and also for purposes of economy, dentists were led many years ago to search for some filling-material which would take the place of gold. As a result of these investigations we have various plastic filling-materials, which are more or less used by the profession at large. Dr. Burchard said that to use plastics intelligently we should understand their properties, and that he would speak of the four most important,—*i. e.*, amalgam, zinc phosphate, oxychlorid of zinc, and gutta percha. In a plastic filling we have a substance which is introduced into the cavity in a soft state, and hardens by crystallizing or cooling. An amalgam is an alloy which contains mercury, it being classified according to the number of metals entering into its combination. Most of the amalgams in use are tertiary combinations, being usually composed of silver, tin, and mercury, the usual percentage being about sixty-five parts silver to thirty-five parts tin; this proportion of these substances being found to give the best results. The addition of a greater proportion of silver causes the alloy to expand, while contraction ensues if an excess of tin is used. The action of the mercury on the alloy is to surround and cement it, just as plaster holds together the sand of the investment.

The results obtained from the use of amalgam depend largely on the manner in which it is prepared and inserted in the cavity. It should be well mixed in the mortar, and then all the excess of mercury squeezed out through a strong linen cloth. After the amalgam is inserted in the cavity, any excess of mercury remaining may be taken up by burnishing a few filings over the surface of the filling. Amalgams have a tendency to lessen in volume in setting, and also to flow or flatten under stress; they are practically insoluble, and have a lower conductivity than gold. The use of amalgam is especially indicated in large cavities, or where it is impracticable to manipulate gold. Five per cent. of copper added to amalgam will decrease the flowing. Copper amalgam is excellent to use far back in the mouth, and on buccal cavities, where it does not show; moisture does not interfere with its insertion in the cavity.—*Penn Dental Monthly.*

## PRACTICAL PLACE.

### Pain after Extraction.

If a pellet of cotton be dipped in the tincture of perchloride of iron, and on this two drops tincture aconite, and two drops chloroform, and the pellet thus charged introduced in the socket of the extracted tooth great, almost immediate, relief will be experienced.

## THE RUBBER DAM.

When the rubber dam is difficult to apply, if the gum margins be cauterized with trichloracetic acid, the parts may be kept dry sufficiently long to insert an amalgam, or gutta percha filling, without the use of the dam If, however, the dam must be applied and the tooth be short or conical and unfit for the retention of the dam, success may sometimes be obtained as follows: dry the tooth thoroughly after applying the trichloracetic acid, and daub a small quantity of phosphate cement on its lingual and buccal surfaces, (should it be a molar or bicusped). This will form, when hard, a ledge or shoulder which will prevent the dam from slipping off. This plan is often better than a clamp which, in the cases of short teeth, cannot be applied low enough on the neck of the tooth, without pinching the gum to such an extent as to cause great pain.

Dr. W. S. Depew, of Jamestown, N. Y., advices all who use " Byant's Bridge Repair Set," that much of the trouble about handling the small nuts, without dropping, when starting them on the pins may be avoided by touching the point of the screw driver with some sticky varnish, such as Sandarac or Howard's, before putting the nut into its slot. After this the screw driver and nut stick together so that it may be manipulated without fear of losing the nut or of getting it started kindly.

## REMOVING TEETH FROM OLD RUBBER PLATE.

Boil the plate for a few moments. The rubber will be found yielding and may be sprung from the teeth with a pair of pliers, avoiding the unpleasant odors arising from holding over gas-jet.—*Den. Digest.*

## A HINT ON EXTRACTING.

After extracting abscessed teeth, always syringe the sockets with hot water and an antiseptic, especially in the lower jaw, where pus may remain in a socket after extraction.—*Dom. Den. Jour.*

## TO SECURE A PERFECT PLASTER CAST.

Never pour newly mixed plaster on an impression without first thoroughly soaking the latter in water. If this is not done the dry impression will absorb the water from the freshly-mixed plaster, while the displaced air from the former, being forced into the latter, results in an imperfect cast.—D. D. ATKINSON, *Am. Den. Weekly.*

### BROKEN COLUMN OF MURCURY IN VULCANIZED THERMOMETER.

Heat the thermometer until the mercury in the bulb expands and joins the mercury above. Cool off suddenly and it will all go down together. It will then register correctly again when the temperature is increased.—J. M. W.

### TO REMOVE GOLD CROWNS.

Some time ago Dr. Dunn, of Chicago, gave us the following for removing gold crowns:

Cut an oblong hole in the crown just over the stump of the root, and with a narrow chisel wedged in between the inside of the crown and stump, the crown can be easily removed.—*Amer. Dental Weekly.*

A student recently asked the president of Oberlin College if he could not take a shorter course than that prescribed by the institution. "Oh, yes,'' was the reply: "but that depends upon what you want to make of yourself. When God wants to make an oak he takes 600 years, but when he wants to make a squash he takes six months."—*Digest.*

### CARBORUNDUM VERSUS ARKANSAS STONE.

It may not be generally known that Arkansas stone can be ground or cut to almost any shape desired with a carborundum wheel, run quite dry, but that the Arkansas stone will grind or cut the carborundum if the carborundum wheel is fed with oil.—*Ash's Circular.*

### PAINFUL DENTITION IN INFANTS

Can be relieved by frequently washing out the mouth with a 1 per cent. solution of chloral hydrate, which is antiseptic as well as analgesic. Rub the gums to soothe the pruritus with the following: Cocaine hydrochlorate, 15 centigrams; chloroform, 1 gram; glycerine, 20 grams; essence of roses, 6 drops.—*Presse Med.*, Oct. 20.

### NITRATE OF SILVER STAINS

Nitrate of silver stains can be removed by rubbing with a cloth wet in one part each of corrosive sublimate and ammonium chloride to eight parts of water.—*Dental Register.*

## METHOD OF REMOVING PULPS.

J. W. Beetham, writing in the *Digest*, describes his method as follows: After applying the dam and washing out cavity with warm water and then with pyrozone, remove all debris and insert a small pellet of cotton saturated with carbolic acid. Then take 4 per cent. solution of cocaine in the syringe, tell the patient it will hurt only for a moment, remove cotton and place in the cavity a soft rubber plug, pass needle through and well into pulp, and inject part of the contents. In two or three minutes the whole pulp can be removed painlessly by means of a barbed brooch.

## TO POLISH AND RESTORE ALUMINUM.

Gray or unsightly aluminum may be restored to its white color by washing with a mixture of 40 grams borax dissolved in 1000 grams water, with a few drops of ammonia added.—*Pacific M. D. Gazette.*

## FOR OPENING ROOT CANALS.

Do you use sulphuric acid 50 per cent. strong for opening root canals? If not, begin at once. It is one of the most valuable additions to the dentist's armamentorium of late years. Use a canal cleaner with it, and be careful not to use the same cleaner for the same purpose too often. The acid renders them brittle.—*Dental Weekly.*

## RELIEF AFTER EXTRACTION.

A pledget of cotton dipped in a saturated solution of camphor in chloroform, placed for a few moments in the socket, will almost instantly afford relief after extraction. Remove as soon as pain ceases. —D. W. BAKER.

## RETAINING APPLIANCES.

Aluminum is a splendid metal of which to construct splints and stays in regulating. It is light, durable, easily swedged and does not corrode. It is cheap and not so conspicuous in the mouth as other metals. It can be bought in wire, bar or plate.—A. C. RUNYAN, in *Dental Century.*

### FORMALIN.

Dr. Kirchoff employs formalin when amputating pulps in bicuspids and molars. When the coronal end of the pulp is exposed, he applies to it a mixture of formalin and zinc oxide; then covers this with cement and proceeds to build over all the permanent filling.—A. S. ESCHELMAN, *Dental Cosmos.*

### TO MAKE A WARPED RUBBER PLATE FIT AGAIN.

Take a new impression of the mouth, from which make a model. Warm the plate until quite pliable. Press down on model and dip in cold water.—*Amer. Dental Weekly.*

### SENSITIVE DENTINE.

Before proceeding to prepare a sensitive cavity for filling it is well to apply a dressing of cotton wool saturated in a solution of equal parts of carbolic acid and oil of cassia. As an obtundent of sensitive dentine it will be found most satisfactory.—*Weekly Dentist.*

### RELIEF FOR CARBUNCLE.

According to Miremond, five to ten grams of red precipitate ointment, applied with friction for one or two minutes around the surface of a carbuncle, causes immediate amelioration and resolution within two or three days without suppuration.

### ANNEALING GOLD.

You will never appreciate the true working qualities ot cohesive gold until you quit passing it in the flame of the lamp. Use a sheet of mica or an annealing tray. Don't be penurious. The good effects will pay for the difference.—W. H. WEAVER, in *Dental Weekly.*

### SENSITIVE DENTINE.

Dr. C. B. Rohland, of Illinois, says: "By adding just sufficient carbolic crystals to cocain hydrochlorate, and rubbing together with a spatula until the cocain is dissolved, a thick syrup is obtained, which is escharotic, antiseptic, obtundent. With this he often obtains most gratifying results in the treatment of sensitive dentine in cavities of decay. It should be used with the rubber dam, dryness to the verge of desiccation secured, applied warm, and treated in situ with the hot air syringe, as hot as can be borne, and again dried before excavating. If one application fails to give the desired result, two almost invariably will be effective —*Dental Brief.*

## How to Remove a Pin Cemented to a Root.

I asked this question of a professional friend recently, and he replied, " Extract the root and split it open." I thought this a little too heroic practice, and suggested a milder one. I had a practical case in hand, a patient who had broken a cemented pin at the junction of a common pivot crown with an upper right lateral root.

It occurred to me that a strong alkali ought to dissolve the phosphoric acid of the cement, and thus cause the disintegration of the filling. So I went home and threw the pivot crown, in which was a part of the metalic pin, into a bottle of strong aqua ammonia and let it remain over night. Upon removing it found the cement a complete mush, and easily removed along with the pin also. My patient called soon after, when with a small abscess tubular knife in the engine hand-piece I cut the cement around the pin as far up as was expedient, and then with a fine-pointed hatchet excavator proceeded to finish the operation, applying the aqua ammonia to decompose the remaining cement, and protecting the gum underneath with a piece of rubber dam covered with a napkin, stopping occasionally to rinse the mouth with warm water. After ten or fifteen minutes' manipulation my efforts were rewarded by a slight movement of the pin, when I seized the end of it with a small pair of pliers and with a rotary motion removed it.

I believe that oxyphosphate fillings last longer in mouths where there is an acid reaction of the saliva, and are less permanent where an alkaline condition prevails. This afforded me the hint, and the result was not unexpected.—William B. Mead, in *Cosmos.*

## To Drive a Needle Through a Copper Coin.

" An apparent mechanical impossibility may be accomplished by simple means, using a copper cent and a cork, with a common cambric needle, as accessories," writes magician Harry Kellar, describing "How I Do My Tricks," in the November *Ladies' Home Journal.* " Announce that you will drive a small needle through a coin, and few will be ready to accept your statement, yet it is very simple, and any one can do it. Take a copper coin, place it upon two small blocks of wood, leaving a very narrow opening between the blocks. Now, having selected a good, sound cork, force the needle through it till the point just appears at the other end. Break off the portion of the head of the needle showing above the top of the cork. Place the cork on the coin and strike it a fair, smart blow with a hammer. The needle will be driven entirely through the penny by a single blow."

### Making Dental Alloy; Order in which the Metals should be added.

Mr. Thomas Fletcher considers it an error in making an alloy containing platinum to first melt this with the silver. Silver and platinum, he says, are difficult to combine, and still more difficult to keep uniform. On the contrary, platinum and tin combine energetically, with the evolution of intense heat, at a temperature below the fusing point of silver. First melt the most fusible metal, then add the others. In this manner the alloy can be made at a temperature not greatly exceeding the fusing point of the most fusible of the metals used, and overheating is entirely avoided. Want of knowledge on this point, no doubt, has caused the extraordinary statements as to the inertness of platinum in amalgam. It never got into proper combination, or was probably localized in the ingot.—*The Dental Record*, London, June, 1898, p. 295.

### Root-Canal Treatment.

Place in the pulp chamber a 50 per cent. solution of sulphuric acid, and pump this acid into the root canals with the finest nerve bristles at once to rapidly enlarge these so frequently quite inaccessible canals, and at the same time to disinfect strongly these. If now one uses, in order to neutralize the acid, not bicarbonate of sodium, as Callahan advises, but sodium peroxid, which I have used for six months, and can thoroughly recommend, we get in the root canals the reaction $H_2SO_4 + Na_2O_2 = Na_2SO_4 \quad H_2O_2$ a rapid evolution of peroxid hydrogen, in *statu nascendi*, which effects prompt sterilization. So we have a method which after many experiences I regard as ideal —H. Bonnecken, *Dental Record*.

### Refining Gold Scraps.

Dissolve the gold scraps in as small a quantity of nitro-muriatic acid as possible—warming hastens the solution—dilute the gold solution with three times its volume of water, nearly neutralize the acidity by adding small quantities of sodium carbonate. If the acidity is completely neutralized, the gold will be precipitated; in that case redissolve by adding a few drops more of nitro-muriatic acid. Filter the solution, carefully washing it through with water, then add slowly, while stirring, a concentrated solution of ferrous sulphate, previously acidulated with small quantity of sulphuric acid. Set the solution aside for twenty-four hours for the complete precipitation of the gold, then decant the superabundant liquor through filter paper so as to catch any floating particles of gold; wash the precipitate out of the vessel, pouring it through the filter paper; roll the paper up and fuse with flux.—F. P. CATCHING, in *Dental Weekly*.

## BISMUTH IN DENTAL ALLOY.

Mr. Thomas Fletcher suggests that a very small portion of bismuth gives a most extraordinary smoothness and plasticity to all amalgams containing silver and tin, without injuring their properties in any way. Although mixed with a small portion of mercury to pack firmly under the instrument, so perfect is its adaptation, that it can be packed against a flat surface of mother of pearl, and when hard the microscopic details of the surface which causes irridescence in the pearl are perfectly reproduced. Owing to this peculiarity it cannot be mixed or used in the hand, as it works into the pores of the skin and cannot be removed without great difficulty. In mixing the alloy, he suggests that only enough mercury should be used to give a cohesive skin to the grains, enabling them to weld together under pressure.—*The Dental Record*, London, June, 1898, p. 295.

## NEW METHOD OF DISINFECTION.

No sanitary subject has received more attention lately than that of disinfection. Drs. Walther and Schlossmann give the following details of a new method of disinfection: By means of a specially constructed apparatus a mixture of formaldehyde and glycerine is sprayed into a room which is to be disinfected, until a thick fog results; about four pounds of the mixture are needed per 1,000 cubic feet. The room need not be hermetically closed during the operation as the ordinary circulation of the air assists in spreading the disinfectant and in enabling it to reach remote corners. Three hours' exposure was found sufficient to kill all germs in the room experimented on, though the test objects were purposely chosen of the most refractory nature.

For example: Pieces of linen thickly coated with a paste of white of egg and garden soil, dried in an incubator; layers of soil 3 or 4 millimeters thick with potato skins under and above them; potato skins alone. These were placed, open and covered, at various heights in the room, in recesses in the wall, on the floor, under pieces of furniture, in tall glass cylinders, or in shorter cylinders under a layer of wadding, in the pockets of thick winter clothing. Fæces were also sterilized by this exposure. Live guinea pigs and rabbits were also found to be freed from bacteria in their skins, their bedding straw, and their excrement.

The authors attribute the very advantageous effect of adding glycerine to the formaldehyde to its hygroscopic character and its power of adhering to and penetreting most of the ordinary porous materials found about a household. They anticipate that it may be found possible to diminish still further the necessary duration of the period of disinfection, and that their method will become a much more powerful agent than any yet known against the spread of infectious diseases, not only in man, but in the lower animals.—*Pract. Chem.*

## POLISHING PLATES.

Mr. W. H. Wilshire, in *Ash's Quarterly*, says:

To prevent pumice flying on one's dress while polishing, mix some soap in water until a foam is produced; then add the pumice to it, and dab the mixture on the denture which is being polished with a soft brush.—*American Dental Weekly.*

## REFINING GOLD SCRAP.

To those dentists who wish to refine their gold scrap themselves, the following plan is recommended: The scraps should be dissolved in a small quantity of nitro muriatic acid—warming hastens the solution—the solution should then be diluted with about three times its volume of water, and nearly neutralized by adding a small quantity of sodium carbonate. The solution should remain slightly acid or the gold will be precipitated; in that case redissolve by adding a few drops of nitro-muriatic acid. Filter the solution, washing it through with water, then add slowly while stirring, a concentrated solution of ferric sulphate, acidulated with a little sulphuric acid. Set the solution aside for twenty-four hours, so that all the gold is precipitated, then decant the liquor through filter paper to catch any particles of floating gold, wash the precipitate out of the vessel into the filter paper, roll up the paper and fuse with plenty of flux.

## POISONOUS FLOWERS, PLANTS AND BERRIES.

The berries of the yew have killed many persons, and it is pretty well known nowadays that it is not safe to eat many peach pits or cherry kernals at once. Among the garden plants commonly in vogue which possess a poisonous nature botanists mention the jonquil, white hyacinth and snowdrop, the narcissus being also particularly deadly—so much so, indeed, that to chew a small scrap of one of the bulbs may result fatally, while the juice of the leaves is an emetic. There is enough opium in red poppies to do mischief, and the autumn crocus, if the blossoms are chewed, causes illness. The lobelias are all dangerous, their juice, if swallowed, producing giddiness, with pains in the head. Lady's slipper poisons in the same way as does poison ivy. The bulbs seem to be the most harmful. Lilies of the valley are also as poisonous. The leaves and flowers of the oleander are deadly, and the bark of the catalpa tree is very mischievous. The water dropwort, when not in flower, resembles celery, and is virulent.—*Scientific American.*

## TO ALLAY PAIN AFTER TOOTH EXTRACTION.

For the last five years, after every extraction followed by pain, I have wiped out the alveolus with concentrated carbolic acid. For this purpose I wrap a little cotton wool round the points of a pair of curved tweezers, dip it in acid, carbol. c. p., and wipe out every alveolus properly. The success is almost complete, and pain having lasted for hours is instantly allayed. The patient should rinse the mouth immediately after the alveolus has been wiped out.—A. SHEUER, *Dental Record.*

## FIRST LEARN AND THEN FORM AN OPINION.

It was F. Mendelssohn who gave birth to the following great truth: "First learn and then form an opinion, not the latter before the former, nor both at the same time."

There is vast wisdom in the above quotation, wisdom that should be learned by all. I do not know of a class of men who need it more than dentists. Very few are really entitled to an opinion on any one subject. An opinion to be worth anything must come through knowledge of the subject. For an illustration close home, we will cite Dr. Miller, of Berlin, as one man, and one of the only men, who is entitled to an opinion on dental caries. What is the opinion of the average speaker or writer on this subject? Nothing at all. Why? Because he had not studied and investigated the subject as Miller has. What is the average opinion on Riggs disease? They are no opinions at all, but simply expressions, and what is an expression worth unless it is backed up by thorough knowledge of the subject in question.

What is more tiresome at dental meetings than to hear a talk or talks on pathology or pathological conditions by the average speakers? Simply asserting a belief without any true knowledge on the subject. It is worse than tiresome; it is an absolute waste of time.

Sometimes we meet with men who make an assertion, as they call it "an opinion," and stubbornly attempt a defence against reason or knowledge or facts.

"First learn and then form an opinion." The older I grow the more diffident I become about speaking before a society of dentists, because I am realizing more and more how little I know.

When you listen you should learn and when you speak you should teach.—B. H. CATCHING, D. D. S., Atlanta, Ga , in *Ohio Dental Journal.*

## PULP DEVITALIZATION—ARSENIC.

A second application of arsenic is a great mistake. If the tissue within the pulp chamber is found devitalized, there is no question concerning that within the root-canals. The sensitive point encountered at the apex is not vital pulp tissue, but is due to an inflamed, irritable condition of the corpuscles of the cementum, from too large an amount of arsenic left too long in the tooth, and requires the application of dialyzed iron to neutralize the arsenic, followed by soothing anodynes.—W. C. BARRET in *Dental Brief.*

## USEFUL HINTS.

Small Japanese toothpicks are excellent for wrapping on cotton to use for iodine, aconite and glycerine for the gums, as they are inexpensive and can be thrown away in each case.

Peroxide of hydrogen is good for cuts, burns, etc., and will heal in forty-eight hours, and take out all soreness.

Bicarbonate of soda will remove all iodine stains, and cause all burning to cease in carbolic acid burns.—DR. LU ELLA COOL, San Francisco.

### How to Make a Clean Model.

If you want a nice, clean model from impressions taken in wax, such as for bites, coat the wax impression with sandarac varnish, and, after it is hard, wet the surface just before pouring the plaster for the model. It will make a clean, polished model, and separates very easily when the wax has been softened in warm water. The result will be most satisfactory.—D. D. A., in *Dental Weekly*.

### Warts.

Regarding these unsightly excrescences, a Paris correspondent says: It is now fairly established that the common wart can be easily removed by small doses of sulphate of magnesia, taken internally. M. Colrat, of Lyons, states, "Several children treated with three-grain doses of Epsom salts, morning and evening, were promptly cured." M. Aubert cites the case of a woman whose face was disfigured by warts, and who was cured in a month by one and a half dram doses of magnesia, taken daily. Another medical man reports a case of very large warts which disappeared in a fortnight from the daily administration of ten grains of the salts.—*Practical Druggist.*

### Formaldehyde.

Formaldehyde is at present the most popular antiseptic and disinfectant. It is found in the market as a 40 per cent. solution. Eight to ten per cent. destroys the spores of micro-organisms in ten minutes. A 1 per cent. solution destroys cultures within an hour, and disinfects and renders feces odorless. A 3 per cent. solution will remove all infection from the hands; and one part in ten thousand prevents the growth of pathogenic micro-organisms.—*American Medical and Surgical Bulletin.*

### Rubber Rings and their Uses.

Keep an assortment of small rubber rings on upright pieces of wood or steel, the size of a match. I often use them for ligaturing rubber dam. Slip on and off easily; do not hurt gum like silk. Handy too in keeping in cotton, etc., over temporary preparations in large and shallow approximal cavities. Can cement them over cavity.—*Dom. Journal.*

### Creosote and Sunlight.

If you hope to retain the full strength and medicinal properties of creosote, it must be kept in a bottle of white glass, sealed with a glass stopper, and placed where it may receive the light of the sun. If placed in dark bottle and hidden from daylight it deteriorates and loses its desired qualities.—Trans. by B. J. Cigrand, for *Digest.*

### FLUIDS OF THE MOUTH AND SENSITIVENESS OF THE TEETH.

The conditions of the fluids of the mouth exert a direct influence on the sensitiveness of the teeth. One authority states it is an axiom that "no cause is so active as a primary influence in inducing sensitivity as a constant slightly acid state of these fluids," and conversely that a neutral or slightly alkaline state is non-irritating.—R. G. McLaughlin, *Dom. Journal.*

### TREATING SENSITIVE DENTINE.

In sensitive dentine, when patients are extremely timid, Dr. Bogue dips a pledget of cotton into carbolic acid, and then into powdered cocaine, and places it in the cavity. This, he says, will obtund the sensibility enough to use granulated chloride of zinc, with little or no pain. In ninety seconds the insensibility of the cavity is complete.—*Dental Brief.*

### TO CLEAN A MIXING SLAB.

Use aqua ammonia. A few drops allowed to remain a short time will make the cleaning easy.—*Western Journal.*

### DOES PLASTER SHRINK IN VULCANIZING?

On this subject, Dr. F. A. Greene, in the *Dental Cosmos*, says: "If you make a model of pure plaster there will always be a change in the shape of the model when the plaster sets, but if the same model is made of plaster and about one-third marble dust you cannot detect any change. You can test that in a series of cases in new work. Take your model and with a pair of compasses make little points at the condyles, and then make a corresponding mark with the compasses on a piece of paper; after vulcanizing, where you use pure plaster, you will find a difference; but if you will do the same thing where you use marble dust with the plaster you will find that the compasses go into the same points. He had known as much as one-eighth of an inch shrinkage to take place.—*Weekly.*

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# THE CONSTRUCTION OF CROWN AND BRIDGE WORK.

By Theodore F. Chupein, D.D.S., Philadelphia, Pa.

[EIGHTH PAPER—CONCLUSION.]

There remains to be said a few additional points on this subject of Crown and Bridge Work. We have touched on nearly all the points of construction.

The disposition of dentists, as also of many patients, is to conceal, as far as possible, all display of gold in the construction of this work. The solid gold tips, which are added to porcelain veneers, make a display on these veneers of at least the one-thirty-second of an inch. These tips are placed on these veneers to act as cushions to deaden or molify the force exerted in mastication. When the piece of gold is stamped upon the die plate, as is shown by Fig. 105, it is cut about the one-sixty-fourth of an inch all around the depression, as shown by Fig. 106. The depression of this tip is covered with borax and heated red-hot. The convex part of the tip may be painted with whiting and water, being careful not to let any of this creep over to the concave side. The tip is then laid on a piece of charcoal and small pieces or scraps of 18-karat plate placed in the concave side and melted by the flame of the blow-pipe. The melting of these scraps is continued until the concave side of the tip is full. Should it be so full as to be above the rim of the tip, it is held against the side of the carborundum grinding-wheel of the lathe until it is ground level.

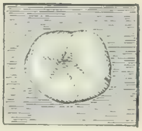


Fig 105.

Fig. 106.

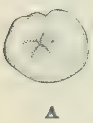
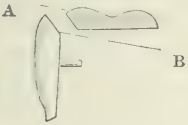


Fig. 107.



When this is ground level the outer edge of the tip (A, Fig. 107), is ground to a bevel, as shown by the side view at Fig. 107A. The veneer, having been backed, is also beveled so as to fit accurately against the bevel of the tip, as shown by Fig. 107B. When tips are added to veneers in this way there is no display of gold at all.

When it is desirable to fit a gold tip over the masticating surface of a single plain or single gum tooth, the masticating surface of these teeth is pressed into mouldine, leaving the impression of this in the mouldine. In this impression fusible metal is poured, forming a die. A hub may be made of lead, by forcing a tapering stick, whittled out on the end, into mouldine and pouring melted lead into this impression. Such a hub is shown by Fig. 108. The piece of 22-karat gold plate being roughly fitted to the die, and the hub being applied, the plate is driven up so that the masticating surface of these teeth are fitted with a covering of gold which can be soldered to the backing.

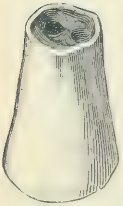


FIG. 108.

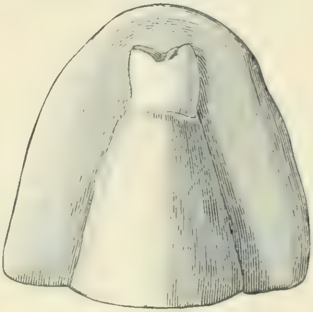


FIG. 109.

When a very accurate die is required, on which to form a shell crown, *a sectional impression* of the tooth may be made from the plaster tooth, as follows: The plaster tooth is marked with a pencil, dividing it in half. Wax is softened, formed into a roll like a lead pencil, and wrapped around the plaster model of the tooth and brought up squarely to the pencil mark with the warmed wax spatula, as shown by Fig. 109. The model and wax are now oiled and plaster poured over both. When hard the wax is removed and depressions or guides made into the plaster on the rim which rested next the wax. This is then varnished and plaster poured over this. The two sections are then separated from the plaster model and fusible metal poured in. This yields a perfect reproduction of the plaster model on which the shell crown may be formed.

When the gold shells are fitted over the teeth, or roots, in the mouth and are brought away in the plaster impression, before filling this impression with plaster and sand to make the model, pieces of iron wire are bent so as to enter these shells and protrude above them about a quarter of an inch, in order to prevent the plaster teeth breaking off from the plaster and sand model while the work is in the process of construction. This is shown by Fig. 110.

Where the bite is very short it is better to form the dummies *entirely of gold*, because if the porcelain veneers be ground so close to the pins they will surely be fractured in mastication, however well they may be protected by solid tips. This is also the case where the muscles of mastication of the patient are powerful, which would bring more than ordinary pressure on the dummies.

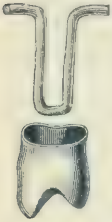


FIG. 110.

There is divided opinion among those who insert bridge work, whether it is best to use veneers as dummies with self-cleaning spaces, or whether to use teeth of the regular thickness as dummies, and let these press slightly into the gum. This, however, must be decided by the case as it is presented. If the gum *be full* the latter can be used; but if there be much absorption, then veneers are indicated. This division of opinion is brought about by the fancied odor of the breath which is thought to emanate from persons wearing this style of work. Those in favor of the dummies pressing into the gum tissue contending that particles of food, putrifying, are excluded from lodgment in bridges with such dummies, which are not entirely excluded in bridges constructed with self-cleaning spaces. To refute this argument we have only to call attention to any piece of plate work where the patient using the greatest care and cleanliness finds it impossible to remove the small particles of food which find lodgment under the teeth soldered to the plate, however careful the workman may have been to grind the teeth to fit accurately against the plate.

We were once disposed to believe that offensive breath *was* due to the wearing of bridge work, but have learned that it is not attributable to this cause.

Thus we have known dentists who only had their own teeth, and wore no artificial teeth at all, and yet their breath was fearful.

We know others who only wear a small gold plate—no bridge work at all—whose breath was insufferable.

We knew an old lady without a tooth in her head whose breath was so offensive that it was a penance to converse with her.

Again we know a dentist who before he wore bridge work his breath was like an infant's, while after he resorted to bridge work one could scarcely speak to him.

On the other hand, we know a lady who wore quite a large bridge, from whose mouth not a suspicion of odor could be detected.

So that when we consider these cases, we must attribute the odor as coming from other sources than from bridge work.

To indicate the cases where bridge work may be employed, we would say:

The case of two central incisor roots will support two lateral incisor dummies soldered to the central crowns.

The two cuspid roots, supplied with crowns, will support the four incisor dummies soldered to these crowns.

Two open-faced crowns over the cuspids will support the four incisor dummies soldered to them.

One molar gold crown, with one open-faced crown over the cuspid, is a good support for the two bicuspids.

One molar gold crown, with a crown mounted on a strong cuspid root, will support the two bicuspids.

One molar gold crown, and a gold crown on the first bicuspid, gives good support to a molar and bicuspid dummy, either for upper or lower jaw.

Wherever two strong supports are to be had for the support of two or three dummies, such cases are applicable for bridge-work.

In isolated cases, such as is shown by Fig. 111 and Fig. 112, serviceable bridges may be made, the illustrations clearly showing how these bridges may be constructed.

Some operators have used vulcanite to secure the dummies instead of soldering these to the crowns. We will illustrate one case of this combination, which will serve to explain how others may be constructed. Fig. 113 shows a case where the four lower incisors are lost, also the two first bicuspids. The roots of cuspids still remain, and are good, strong, firm roots.

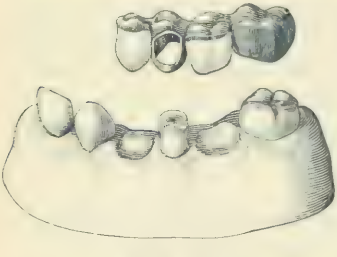


FIG. 111.

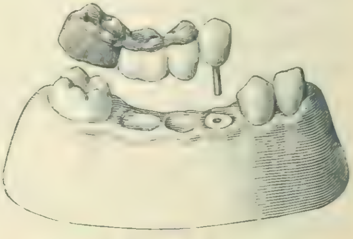


FIG. 112.

The first procedure will be to construct two caps to fit over the cuspid roots. The protruding ends of the dowels, above the caps, are sawed on their long axis, and the sawed end bent over so as to form a **T**, as is shown by Fig. 114. Or a better way will be to slightly saw this end and solder a piece in the slot, so as to form a **T** with a long arm, as is shown by the engraving. The long arm of the **T** should be towards the space where the incisors are to be supplied, the short arm where the bicuspids are needed. These arms are bent so that they will be well embedded in the vulcanite, and not interfere with the pins of the teeth. Being placed in position, an impression in plaster is taken; the arms engaging in the plaster, they are brought away with the dowels in the roots in the impression. A model is made from this impression, which is shown by Fig. 113. Vulcanite teeth are then waxed to the model and around the projecting arms of the caps. The case is then flasked, packed with vulcanite, vulcanized, filed up and finally polished, when the finished bridge will show as it is represented at Fig. 113.

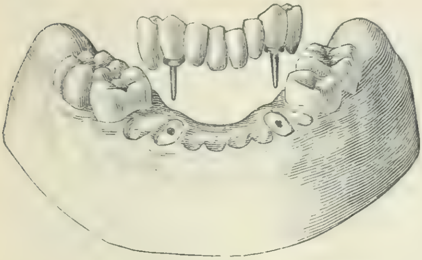


FIG. 113.

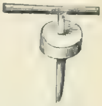


FIG. 114.

We have written up such cases as should be attempted, and illustrated those which will prove most serviceable to those compelled to

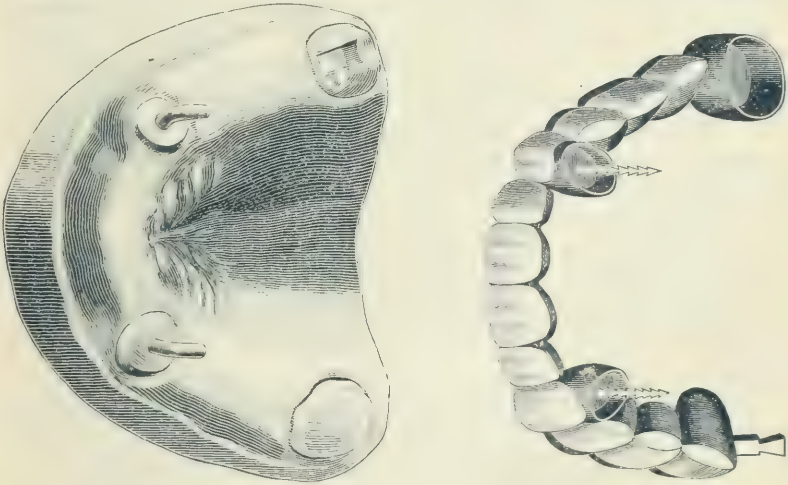


FIG. 115.

wear them. It remains now, in conclusion, to speak of those which should *not* be attempted, or if attempted, only attempted rarely. Of these the illustrations shown at Fig. 115 will demonstrate such cases.

When cases such as these are constructed, it should be with the understanding that they cannot last long—for it is out of reason to expect two roots and two teeth to do the work of twelve teeth—it may be well to attempt it; but if greater expectations are harbored, the patient should be dissuaded from great expectations.

## PULP MUMMIFICATION.

By T. F. Chupein, D.D.S., Philadelphia, Pa.

Paper read before the Pennsylvania Association of Dental Surgeons.

This subject is now claiming the attention of the profession to a considerable extent, in contradistinction to the tedious operation of cleansing, rendering aseptic, and filling each root canal. The only opposition it meets is that it might give the sloppy operator a shorter road to the end, and lead to a lack of thoroughness.

The deductions and successes reported by Miller, and the excellent article published in the *Dental Cosmos* for May by Professor Boennecken, of Prague, Bohemia, as also the one of Dr. H. Prints, of St. Louis, Mo., published in the *Items of Interest* for May, enchain our attention from the successes reported, and force us to try the method, both for the comfort of our patients and the vast amount of labor it would save ourselves.

In the filling of roots, often, after the most persistent effort, with the most minute broach, to pass it into the apical space, we fail to effect its passage, hence, we are not certain that the treatment will be successful, as we must conclude there is a crook at the root end or the foramina choked by debris, which prevents the probe passing into the diseased space.

If this method can so change this semi-liquid albuminous mass into a leathery condition by a capillary attraction of the paste into its substance, to the minutest attenuation of the pulp, a decided advantage will be gained by the lack of strain it saves both operator and patient.

It has long been an opinion that a little aid given to nature, results more beneficially than the greatest amount of labor on the part of art; hence, we are favorably disposed to the suggestions of the writers alluded to.

To condense, in the most brief manner, the *modus operandi* given in the papers we have mentioned, we will say:

After the nerve has been killed, remove the ganglion in the nerve chamber with new, sharp burs. Syringe out the debris with warm water. Let the approach be direct. Now apply the dam. Wash out the nerve-chamber with a 10 per cent. solution of Formaldehyde. (To make this, use 1 volume of the Formaldehyde as it comes to us from the shops, to 3 volumes of water.) Fill the nerve chamber with Formaldehyde paste. Dr. Printz gives the following formula for the paste, which any reputable druggist will put up in a collapsible tube for a trifling sum :

Cocaine hydrochlorate ........................ grs. x
Thymol,
Formaldehyde, dry (paraform), a.a......grs. xx
Zinc oxide ..........................................grs. xl
Glycerine, q s. to make a paste.

"The cocaine and thymol should be triturated first, thus becoming paste-like spontaneously. The paraformaldehyde and zinc oxide are added successively, and finally the glycerine, of which very little is needed."

Press the paste out of the tube on the end of an amalgam ball burnisher and apply to the nerve-chamber; press it gently against the root stumps by placing a pellet of cotton over the paste.

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In cases of slight pulpitis, proceed as above described. The above treatment is only used when the nerve has been killed.

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### For Putrescent Pulp Treatment.

Open nerve canals by Callahan's treatment with sulphuric acid. Neutralize the 50 per cent. solution of sulphuric acid, either with saturated solution of bi-carb. of soda, or, preferably, with peroxide of soda. When canals are clean, fill with Formaldehyde paste. For these root fillings mix the paste with a 10 per cent. solution of Formaldehyde (3 vols. of water to 1 vol. of Formaldehyde), and fill the root-canals with this thin, creamy root filling, which is a perfect antiseptic filling.

Note.—The paste ready prepared for use, is for sale by Messrs. Johnson & Lund, at their various branches and agencies.

## PAMPHLETS RECEIVED.

### The Dental Departments of the University of Buffalo.

This is the announcement of the session of 1899 and 1900. It is gotten up in fine style, with numerous illustrations of the office, reception rooms, lecture amphitheatre, laboratory, etc., etc., etc. The didactic staff, as well as the adjunct and clinical staff, gives the names of very prominent men in the profession, commending the college to the favorable consideration of students about to embark in the "craft" of dentistry.—Ed.

## SELECTED ARTICLES.

### AN EASY METHOD OF REFINING GOLD.

By Dr. A. D. Hooker, San Jose, Cal.

Since the introduction of crown and bridge work, the busy dentist finds his gold drawer gradually filling up with scraps of gold, ranging in quality from eighteen to twenty-four karats fine.

The work of refining gold by any of the ordinary processes is not only difficult for the average dentist, but it takes a great deal of time and skill.

The process of refining to which we now desire to call attention is very easy and simple. One which the student or office boy could work out with very little trouble. It is briefly as follows:

Gather up all of the old scraps and filings, carefully discarding all stray pieces of platinum which may be mixed with the gold. Take four parts of sheet copper to one part of gold scraps, melt all together in a crucible, or it may be done with the blow-pipe, with foot-blower attachment, using a large piece of charcoal or asbestos cup to melt in. After the two metals have been perfectly melted and thoroughly mixed, cool off and place the mass on an anvil or swaging block and with a four-pound hammer reduce to a thin sheet. Then run it through the rolling-mill until the whole mass is as thin as tissue paper. Boil out in soap and water to remove any oil which may have gathered upon it during the process of rolling. Now cut the sheet or sheets of metal into narrow strips about one-fourth of an inch in width, and place them in an earthen vessel and set outside of the office window. Pour into the vessel containing the metal sufficient commercial nitric acid to attack and eat up the copper, which it will do very quickly if everything is working right. After letting it stand a short time to cool, the acid may be carefully poured out so as not to disturb the gold, which will be found in the bottom of the bowl or vessel.

At first sight one would almost believe that this black, dirty-looking deposit was worthless, and that the gold had been ruined by the refining process. It is only necessary, however, to carefully wash and rinse with clean water to bring the gold plainly into view.

Gather up the fine dust, dry, melt and roll again into any thickness desired.

If every detail of the process has been well done the gold will be pure, twenty-four karats fine and as soft as lead.

In remelting and rolling clippings and scraps of twenty and twenty-two karat gold, which has been kept free from all other grades, we naturally expect to work well without any refining; but it does not always do so. It will sometimes crack under the hammer, and act in a fractious and unbecoming manner under the roller.

To make this again ductile and pliable it will only be necessary to place it on a piece of charcoal (first making a cone-shaped depression in it), and with the blow-pipe melt and boil it till very hot, and while it is still boiling, throw onto the molten mass a small piece of corrosive sublimate, followed by a little saltpetre. This will clean it up and make it again pliable.

We have often found that perfectly clean 22-k. scraps, when melted and made to boil with heat from the blow-pipe on a piece of charcoal, would crack badly when hammered on the anvil. The effect of corrosive sublimate would remove any lead, tin, or zinc which may have found its way among the scraps, while the saltpetre would remove any trace of iron. Our plan is *not* to melt the scraps on charcoal, but on a piece of an old crucible or a piece of slab, such as is used to bake artificial teeth on, which may be readily procured from any artificial tooth manufactory. Place the slab or piece of crucible in your asbestos holder, for fear the nugget might roll off when melted. As soon as it is melted take the face of a hammer and flatten the melted nugget. Done in this way the gold will rarely crack either in rolling or hammering, while if it be melted on charcoal it will almost invariably crack.—Ed.

## IODOFORMAGEN CEMENT.

### By Otto Bickel, D.D.S., New York.

Since the publication of my little article about iodoformagen cement in November number of last year's *Items of Interest*, I have received so many inquiries that I resolved upon communicating with the interested parties *in pleno*. The reports of experiments made with formagen (Deutsche Monatsschrift fur Zahnheilkunde) by practitioners on the other side of the Atlantic have furnished valuable material, to which I wish to give due credit.

Since its discovery formaldehyde was not heard of for about a quarter of a century, until its reappearance two years ago was greeted with enthusiasm by surgeons, and it naturally came into the hands of dentists who tried hard to make it serviceable for the profession.

Formaldehyde is a gas ($CH_2O$) gained by oxidation of methyl alcohol. It is commercially sold as a forty per cent. saturated watery solution, called formaline, or formol. Even at an ordinary temperature formaline gas escapes from the formaline, if the receptacle in which it is kept is not tightly closed. Gauzes, bandages and cotton exposed to the vapors of heated formaline are thus rendered perfectly sterile. It was found the most efficient antiseptic we possess, and was rightly appreciated on account of its lack of all poisonous qualities.

But as nothing is faultless in this world, so formaldehyde showed a very "shady side." Applied to wounds and mucous membrane it produces unbearable pain, which lasted often for hours. As a dressing for diseased pulps, it was an unquestionable success, but the accompanying severe pain stamped its application to be a rather "heroic treatment."

After many resultless experiments, Abraham (Berlin) succeeded in producing a cement which he called formagen, the powder and liquid of which was saturated with formaldehyde. This cement proved to have all the desirable qualities of formaldehyde, without showing any tendency to produce pain. Its application was described in my abovementioned article, and I will now proceed to relate my experience since.

When I submitted my first article to the editor of *Items of Interest*, I met with a caution. Dr. Ottolengui expressed his scruples as to the final value of the preparation as a saving agent for inflamed pulps. Nevertheless, the article was published, and I am happy to say that I remain a strong advocate of the excellent qualities of the iodoformagen cement.

### IODOFORMAGEN IN PRACTICAL CASES.

Highly inflamed pulps, capped with the cement and filled during the same sitting, recovered and showed life eight months after the treatment. They were sensitive to sudden change of temperature.

Seven months ago I used the cement on the mesial surface of an upper central, and when, some weeks ago, I prepared the distal cavity of the same tooth in order to fill it, the sensitiveness of the dentine was so intense that I applied guaiacocaine, cataphoretically. The tooth was alive.

Another interesting success could be recorded in a case of pulpitis *acuta ulcerosa.* The tooth was an upper second bicuspid. Patient could not point out the aching tooth, nor was he able to tell on which side the tooth was located. He complained of "general toothache," which grew worse when he went to bed. The examination showed a mouth with healthy teeth, one upper bicuspid extracted, the three others filled with amalgam. The one standing alone was found to be the offender. The removal of the filling revealed the cause of the pain. The dentist who had filled the tooth had probably overlooked a minute opening leading to the pulp chamber, and the consequence of it was a little ulceration which had formed under the odontoblastic layer. By careful application of the syringe filled with a warm, weak solution of lysol in water, the pus was removed and the cavity dried with aseptic cotton. A cap of iodoformagen cement was applied with necessary precaution, and the tooth filled with gutta percha. The pain stopped, patient could sleep, and there is no apparent indication that the pulp has breathed its last, for the tooth shows reaction against changes of temperature when tested under application of rubber dam.

This being the only case of pulpitis *acuta ulcerosa* coming under my care where I applied the iodoformagen cement, I will certainly not build up a theory on so weak a foundation—I merely relate my experience.

The action of the formaldehyde on the pulp tissue is explained thus: The red blood corpuscles retract and the tissue becomes hard, but very soon we find a *restitutio ad integrum*, and after the elapse of four weeks the pulp resumes its normal functions.

As an application for antiseptic treatment of the root, formaldehyde is infinitely preferable to all other disinfectants. It possesses sufficient disinfecting power to sterilize at once any root canal without discoloring the tooth, and without affecting the hard substance of the tooth.

It seems to be strange that the hardened iodoformagen cement does not lose its disinfecting properties, but experiments made by Abraham (adopting W. D. Miller's method) proved distinctly its germicidal efficacy.

In concluding the article let me sum up:

In case iodoformagen is the realization of the conservative dentist's dreams, we will all join in the chorus of the festive hymn and shout "Eureka!"

But should it not fulfil our principal desideratum, and merely mummify the lamented pulp, we will amputate the diseased part of the pulp, and formaldehyde "will do the rest."

Then we can do away with the troublesome removal of pulp remains in inaccessible canals, and avoid all the unwarranted and complicated methods of filling those canals.

## OPPORTUNITIES FOR SUCCESS.

By J. H. Grant, D.D.S., Palestine, Texas.

It has been truly said that "The world pushes a professional man the way his intelligent accomplishments and inclinations wish him to go." If he is ambitious and wants to go up, it pushes him up—if going down, it pushes him down; gravitation, however, making the speed greater on the decline.

A successful life has its moments of strength and bloom, its bright moments of inspiration, in which the human artist, the painter of human life, seizes on and utters what is purest, most beautiful and divine. If, in our human life, we acted only then, if then all sacrifices were made, all victories won, there would be but little difficulty in making not only our human life but our professional life a complete success. When at our best we but fill our alloted space as a special mission. It might be said that each of us in our professional sphere is a bottle on the shelf of time on which is placed a special label, for a particular position, and by it we steadily and regularly, even though sometimes struggling against it ourselves, or though struggled against by others, either fall or stand in our appropriate places. Men of real merit will, if they persevere, at last reach the station to which they are entitled, and pretenders, intruders and quacks will be ejected with contempt and derision. I feel that it is no small evil that the avenues to professional fame should be blocked up by a swarm of noisy, pushing, elbowing pretenders with no other accomplishments than cheek and a mania for outdoor advertising, and who cannot make good their entrance, but sadly hinder in the meantime those who have a right to enter. Those who have pride and who, by their application and hard study, acquire accomplishments, and who will not disgrace themselves by joining in the unseemly scuffle, must expect to feel at first as if hustled and shouldered back, while some men of talents, accordingly, turn away in dejection from pursuits in which success appears to bear no proportion to deserts. But there are some who have sufficient confidence in their own powers and sufficient elevation of mind to wait with serene and contemptuous patience, while quack after quack presses before them.

It is the conscientious man that struggles most at the beginning of his professional career, but will have less anxiety on the home stretch. Environments often place men in hard luck, but never fear disadvantages; a clear conscience, backed up by good discipline and a determined persistency, will overcome these appearing obstacles and clear the way to honor and respect (though seemingly) over a rough way.

Be a man, mind your own business and you will forge ahead, and then your attention will be less attracted by the side shows that often perform in your town, and gradually competition will be less—your field will be clear, your position and reputation well established, and your success assured.—*Texas Dental Journal.*

## THE NON-REMOVAL OF SOFTENED DENTINE BEFORE FILLING.

Dr. J Leon Williams describes his treatment in the *Items of Interest*, about as follows: This is a question that can hardly be answered off-hand, or without the use of several ifs and buts *If* there has been no inflammation or but slight inflammation of the pulp, I think it is perfectly safe to leave a layer of partially softened dentine over the pulp, *providing the proper treatment of this softened dentine has been carried out.* And this is my idea of the proper treatment in such cases.

Remove the softer portions of dentine and place a pledget of cotton-wool, saturated with absolute alcohol, in the cavity. Leave this for one minute, then remove, dry the cavity, and flood it with oil of cloves, which also leave for one minute. Any one accustomed to histological work will see the *rationale* of this treatment at a glance. Oil of cloves, which is known to the histologist as one of the most powerful *clearing* agents known—*i. e.*, it has the property of very rapidly penetrating any tissue, even bone and dentine, that has previously been treated with strong alcohol. It is a sufficiently good germicide for the purpose, and it seems also to have mechanical effect of value in slight congestion of the pulp. Used as above described, it will penetrate a considerable thickness of dentine, and thus search out and destroy or render inert any forms of bacteria that may have penetrated beyond the point where you have cut. Dry out the excess of oil of cloves and varnish the bottom of the cavity with Canada balsam, dissolved in chloroform, to which has been added ten per cent. of the solution of hydronaphthol in chloroform previously spoken of. For this use, the balsam is dissolved in chloroform instead of turpentine, because here we wish it to dry rapidly, while in the treatment of the root-canal we do not wish it to dry rapidly. Partially dry the layer of varnish in the bottom of the cavity with hot air and then apply to the floor of the cavity a piece of thick asbestos paper, cut the proper size and shape. The partially dried varnish will hold the asbestos paper firmly in place. Now line the cavity with quick setting cement and fill with gold or amalgam. Such treatment will leave the tooth reasonably free from sensitiveness to thermal change, even when the pulp is nearly exposed.—*International.*

## OXYCHLORIDE OF ZINC.

By S. T. Kirk, D.D.S., Kokomo, Ind.

This, the oldest of our cements, and usually known as Os Artificial, is, in its proper use, the very best of the cement family. There are preparations of the oxyphosphates that will stand in exposed places better, but there are none which have so good preserving qualities.

In the days of long ago, more than a quarter of a century, the older members of the profession remember it as the only cement at our command. It is from the observance of its use in the past that I wish to speak. Having practiced in the same place for more than thirty years, I have had a good chance for observation.

Early in my professional life I learned that many failures came from the filling of roots with gold, and even from the most eminent practitioners; circumstances led me to fill roots with Os Artificial instead. And in after years I have learned its true value, especially since crowning has been in such common use. I find many roots of teeth that were so filled, the crowns having been entirely broken down to the line where the Os Artificial protected it, and then remained in good condition, waiting to be redeemed and placed to good use in supporting the modern crown. I have found many roots buried by the gum which, after consulting my record and finding they were filled with this material, I have immediately disposed of the gum and found the root solid and able to hold a useful crown. I use that preparation of oxychloride of zinc known as Os Artificial, and for many years I filled the entire root with it, but often, if great care is not used, the fluid will pass through the foramen and cause inflammation of the periosteum; hence, on the introduction of gutta percha for root-filling, I fill the canals partially with it, but invariably use the Os Artificial for the main part of pulp chamber. I think the fluid permeates the tubuli and preserves the whole tooth structure as nothing else can. For the same reason I use it in all large cavities, covering the nearly exposed pulp with a non-irritant. I fill the cavity one-half or two-thirds full of the Os Artificial, pressing it solidly into its place with spunk. This cannot be done with the oxyphosphates.

Thus far it makes a better filling to preserve the tooth structure than any metal, at the same time makes a solid and even foundation upon which to build the metal, which need be no more, in many cases, especially large crown cavities, than as a cork to a bottle.

In filling a root having an alveolar abscess with fistulous opening, if a small quantity of the fluid passes through the foramen, and the canal is immediately filled with the cement, it invariably becomes sound and well in a short time, and remains so.

The two points to be guarded against are, first, in root filling, not to let the fluid pass through, as it will inflame the periosteum ; second, to protect the nearly exposed pulp in large cavities.

A piece of cotton, moistened with the fluid, is most excellent to wipe out all cavities before filling, on account of its preserving qualities.—*American Dental Weekly.*

## EUROPEAN DENTISTRY.

### W. A. Ivory, D.D.S., Wayne, Neb.

Read before the Nebraska State Dental Society, Lincoln, Neb., May, 1897.

You are no doubt aware that there are strong feelings of prejudice existing on both sides in regard to things European and American, and when I found that dentistry in Europe was practiced so differently from what I had expected and from what we had been taught to think is the right way, I must say that I had feelings of this kind myself. Perhaps it is well to say, too, that in a country where they are all so exclusive, not given to answering questions, but only to asking them, it is quite impossible to get at the real facts in the case, although in what I have to say I will endeavor to fairly and honestly express myself about European dentistry only as I saw it, and the impression it left on my mind during the year I was privileged to spend there.

They have quacks and advertising men, of course, but these are of such a low order that they are not worth considering ; our cheap men have some redeeming features, but a careful study of these men failed to show anything worthy whatever. They are always located in the business portion of the city, and call themselves American dentists, and in most cases have the whole store front filled with false teeth, etc. There is another class of dentists who might be called cheap, but they are not advertising men; they copy as largely as possible after the better class of dentists, but have none of the qualities that will bring around them the better class of people.

Their fees for filling are about the same as for extracting, and the work is so poorly done that filling teeth is not encouraged.

The representative men of the profession are always located in the residence portion, and most frequently these are all closely associated together in one part of the city; the office is always on the ground floor, and in most cases is also the residence of the dentist; but whether this is so or not, the furnishings are always the same and exactly that of a private residence.

The only sign these men have is a small brass plate on the door; often it is simply "Mr. Brown," though in many cases they have L.D.S., M.R.C S., etc., and when it is only the plain name these men are extremely hard to find, as almost every door has a brass plate, and the architectural design of each house is very similar.

There is never any way to open these doors from the outside. The large proverbial brass knob is always there to pull it shut, but none to open it by, so it is always necessary to ring for admittance; and if there is a yard in front of the house, which is often the case, you will also have to ring for admittance to this.

The entrance is always into a hallway, and in every instance my attention was called to the number of ponderous locks on the inside of the door, which were there, I thought, mainly for the purpose of carrying their thoughts back to "ye olden time." The servant, invariably in dress suit, who answers your ring will show you into the waiting room, which is always the dining room, and furnished as such. While there is a very wide difference in the cost of the furnishings, the style is always the same, so that when you have seen one office, you may know that every other in the general arrangement will be just like it.

If a man has the means to have these furnishings in good taste, has the qualities of a gentleman and can obtain recognition of some of the nobility, his success is practically assured, although he may have very few of the qualities of a good dentist. The judgment of one with such a recommendation would never be questioned by one of his patients, so he would simply advise for them in his practice something that he has the ability to do, and I am not sure but that social standing or a recommendation of this kind would count for more in almost every case than skill in saving teeth.

Changes are few in that country; when once people have given their patronage to an office they seldom go elsewhere. And it is also a fact that any stranger can buy out a practice anywhere in Europe, and if he is in any sense worthy, he will undoubtedly retain the full patronage of the office—so it would appear that it is the office rather than the man which needs to be established.

Another fact that will bear out this idea is that it is very seldom that the patients will find fault if the work is done by an assistant, so there exists little necessity for dentists endeavoring to keep up with the advance of dental progress, or be more skillful in performing their operations; for theirs is a "finished profession"—simply following the methods already established, and it is more a money consideration with them than the real benefit they might do their patrons.

They get as much for putting medicine in a tooth to relieve pain as they do for a filling; extracting teeth they speak of as a surgical operation, and what differently can they do when so many of them say that they work for thirty patients regularly every day?

Judging from what I saw, there is very little care taken of the teeth in that country, for I am sure I would see more decayed teeth in one week on the streets of any of their cities than I would see here in a lifetime. A very prominent dentist in Manchester, who is dean of their principal college, said to me, "I have no faith whatever in stopping teeth, and discourage it all I can." Another prominent dentist in Liverpool said: "You fellows in America are killing yourselves trying to save all the teeth, and filling teeth with gold; we extract them, take an impression, and the man in the laboratory does the rest."

The fee system is another drawback to skillful operating—one guinea being the regular charge for each operation.

This was illustrated to me by a dentist whose patient had just left his office; he had only smoothed off a rough place on a tooth of his patient, and when it felt all right to his tongue, said "Thank you," laid his guinea on the table and walked out, and would have done exactly the same thing had it been a gold filling that was put in for him.

One dentist in Huddersfield, a city of 150,000 population, had solved the problem of saving teeth as far as he was concerned; said he: "There is not one dentist here that is making any attempt to fill teeth whatever, and I am going to America to get some man who can do this work, as I cannot do it myself, and then I am going to fill teeth six months for nothing, just to show people that it can be done."

Very many of them know no use for the rubber dam; not that they have any substitute, but simply because they are doing nothing to require it; while the masses of the people are suffering, totally ignorant of the fact that they have not exhausted the resources of modern dentistry.

I got myself into difficulty soon after I arrived there by calling a dentist "Doctor," and I did not forget afterward that the title doctor was never applied to a dentist; by most of his clientele the dentist is looked upon as a servant, and treated as such. Their definition of a gentleman is one who can live on his income; this is especially so if it has been inherited. I think one who had earned this competency himself would not be looked upon with much favor. Speaking about a dentist one day, and referring to him as a gentleman, the party quickly corrected me, saying: "Oh, no; he is not a gentleman, he is a dentist," and he was absolutely correct according to their standard of reasoning.

Titles, too, count for a great deal there, and many cannot understand why this does not help them fill teeth. One dentist said to me: "Why, I have more titles than any dentist in England, and still I cannot fill teeth with gold." Filling teeth with gold is not practiced to any great extent, nor is it looked upon with favor by the people; their chief objection to it is the appearance, but why this is so, and yet at the same time it is considered perfectly "proper" to allow teeth to go without any care whatever, with cavities of decay in plain sight, is something hard to understand.

Cements and amalgams are the chief materials used in filling teeth. A prominent dentist said to me: "We can get just as much for a cement filling as for gold, and as soon as they are worn out the people are perfectly willing to pay to have the teeth refilled; consequently, it is to our advantage in every way to continue the use of cement."

I do not know to what extent the treating and filling of roots is practiced, but I was told by representative men in the profession that the custom with them was to leave an opening in the filling when they did an operation of this kind. I made numerous inquiries concerning regulating and bridge work, but was unable to learn anything in regard to either, and I saw nothing in the laboratories I was in to indicate that this class of work was ever done. The only crown work I saw was made by Dr. Cunningham, at his office in Cambridge. It was a difficult case, and nicely done.

Generally speaking, artificial dentures are, to a very considerable extent, the work of the dentist, and there are reasons, of course, why they should not wish it changed; this class of work has never been cut in price, and again, no dentist is obliged to do his own laboratory work, nor would he think of doing it. Labor is cheap there, and it is no trouble to train a man to do this class of work, and when he is once trained in this particular branch he will stay for life if he is wanted.

Many of these dentures are made up on a metal base, but I do not remember of having seen a single one where the teeth were attached with rubber. They are always soldered to the plates. They are still using the old-fashioned spiral spring to hold the plates in place instead of the suction plates.

Excising teeth instead of extracting them, and putting the plate over the roots, was another feature in dentistry that was new to me; they claim in its favor that there is no absorption of the gums, although it is quite easy to detect these cases from the red line at the margin of the gum.

Though they differ greatly from us in the practice of prosthetic dentistry, if they are entitled to any credit for what they have attained in the profession it is along this line.

The dentists of the United Kingdom are, as a class, a splendid lot of men, well educated and thorough gentlemen; while they are making efforts to raise the standard of dentistry, yet from what I saw and was able to learn, I am of the opinion, generally speaking, that but little progress is being made. It is only a few that can be said to be skillful operators, and it was surprising to me to see what little attention was given to this most important branch of the profession. I would say that they are much more careful not to violate the rules of etiquette or professional customs, and to be eminently "proper" at all times, than they are to follow closely the teachings of a Black or a Johnson.

By their high gentlemanly qualities, and by inheritance, many of them have gotten a very rich clientele, and are justified in getting good fees, for it is a fact that many people over there would prefer patronizing an office where their grandfathers had had work done than any other. "What was good enough for them, is good enough for me," is their reasoning; but be this as it may, it is nevertheless true that the teeth are not receiving the care they should.—*Review.*

## ANNUAL MEETING OF THE NATIONAL DENTAL ASSOCIATION.

The Annual Meeting of the National Dental Association will be held in the ball-room of the International Hotel, at Niagara Falls, August 1, 2, 3 and 4, 1899.

A railroad rate of one and one-third fare on the certificate plan will be obtained. Also reduced rates on C. & B. and Northern Transportation S. S. Lines. It is suggested that members living at a considerable distance organize parties, and thereby be enabled to secure lower rates from railroad companies.

Following is a list of hotels and their rates per day: Cataract House, $3 to $4; International Hotel, $3 to $4; Kaltenback Hotel, $3; Imperial Hotel, $2.50 to $4; Columbia Hotel, $1.50 to $2; Temperance House, $1.50 to $2; Niagara Falls House, $2; Niagara House, $2.

Dr. M. O. Cooley, of Niagara Falls, N. Y., will engage rooms and answer any questions regarding local arrangements for the meeting. Definite meeting places for sections will be announced later.

It is the wish of the officers of the Association that members make special efforts to be present at section meetings, on account of the unusual number of valuable papers which must first be passed upon by the section to which they properly belong.

The following is the preliminary program: "Porcelain Enamel Inlays," Dr. N. S. Jenkins, Dresden; "Orthodontia," (Illustrated), Dr. Edward H. Angle, St. Louis; "The Absolute Efficiency of the Controllers of the Market for Dental Cataphoresis," Dr. W. A. Price, Cleveland; "Dental Electricity," Dr. L. E. Custer, Dayton; "The Practical Side of It," Dr. S. S. Stowell, Pittsfield; "A Bastard Profession," Dr. E. P. Beadles, Danville; "Surgical Operations in Early Infancy for Palatal Defects," Dr. Truman W. Brophy, Chicago; "Cements," Dr. E. K. Wedelstaedt, Minneapolis; "The Reflexes of the Three Lower Molars," Dr. James Truman, Philadelphia; "Operative Dentistry," Dr. J. N. Crouse, Chicago; "Gomphosis," Dr. B. H. Catching, Atlanta; "Prognathism. Extraction and Delay versus Expansion and Early Attention," (Illustrated), Dr. R. Ottolengui, New York; "Some Phases of the Cement Question," Dr. W. V. B. Ames, Chicago; "A Study of Hare-Lip and Cleft Palate," (Illustrated), Dr. Thomas Fillebrown, Boston; "Dies and Counter Dies," Dr. Robert H. Nones, Philadelphia; "Phyorrhœa Alveolaris," Dr. M. L. Rhein, New York; "Constitutional Deterioration the Cause of Dental Caries," Dr. Harvey, Battle Creek; "Oral Affections in

Secondary Syphilis," Dr. W. C. Barrett, Buffalo; "The Physiological Relation of the Adult Tooth-Pulp to the Economy," Dr. C L Hungerford, Kansas City; "Etiology of Gnathic Abnormalities," Dr. A. H. Thompson, Topeka; "The Dental Profession in Charity; an Experiment in Chicago," Dr. Carl Theodore Gramm, Chicago; "Some New Points in the Anatomy of the Face and Jaws," Dr M. H. Cryer, Philadelphia; An Important Paper, by Dr. J. Leon Williams, of London.

Subjects to be announced: Dr. W. Geo. Beers, Montreal; Dr. H. L. Ambler, Cleveland; Dr. Joseph Head, Philadelphia; Dr. John S. Marshall, Chicago; Dr. A. H. Peck, Chicago; Dr. R. H. Hofheinz, Rochester; Dr. G. V. I. Brown, Milwaukee; Dr. H. H. Johnson, Macon; Dr. C. Edmund Kells, New Orleans; Dr. L. M. Cowardin, Richmond; Dr. L. L. Dunbar, San Francisco; Dr. G. V. Black, Chicago; Dr. W. H. Whistler, Cleveland; Dr. A. W. Harlan, Chicago; Dr. C. N. Johnson, Chicago; Dr. H. J. Goslee, Chicago; Dr. F. W. Low, Buffalo; Dr. T. P. Hinman, Atlanta; Dr. B. Holly Smith, Baltimore; Dr. M. C. Smith, Lynn; Dr. Edward C. Kirk, Philadelphia; Dr. W. Ernest Walker, Pass Christian.

A revised program, with reports from chairmen of sections, will be issued later. Prominent members of the profession from abroad have been invited to be present.

The names of the gentlemen who have promised to present papers is a sufficient guarantee of the high character of work which will be done at this meeting. The minor details will be carefully looked after, and all unnecessary and irrelevant matter eliminated, so that the business of the Association may be transacted in a prompt and expeditious manner. It is hoped that the various State Societies will send full delegations, and that all members of the Association, and reputable dentists in this country and Canada who are not members, will show their interest in and loyalty to the National Association by attending this meeting.

H. J. Burkhart, *President.*

Emma Eames Chase, *Cor. Secretary.*

J. N. Crouse, *Chairman Ex. Committee.*

## EXTRACTION OF THE FIRST PERMANENT MOLARS, A BENEFICENT CONSERVATIVE OPERATION.

By W. Mitchell, D.D.S., London, Eng. Read at Twenty-fifth Anniversary Meeting of American Dental Society of Europe, at London, August 3–6, 1898. The points I wish to bring forward for your consideration are: Why and when shall extraction of the first permanent molars be performed? I purpose by my deductions, based upon experience, to convince those who have heretofore been opposed to the extraction of these teeth, that we have a practical and legitimate means of preventing to a great extent the ravages of dental caries, especially that form produced by lateral pressure, and securing a more comfortable and serviceable dental armament by more perfectly safeguarding the interproximal space than is possible by flat and imperfectly contoured fillings, and later by affording patients a more perfect masticating surface; and last but not least, the satisfaction of securing to patients in the most practical way probable immunity from constant and prolonged dental operations during the greater part of their lives.

Briefly stated, my proposition is this: Where the first permanent molars are in a condition of decay or retrogression, from whatever cause, that suggests the probability of their being a source of continued trouble to the patient, I would strongly urge their removal, provided the operation be performed at the right time. In order to secure the desired results it is absolutely necessary that the child be constantly under the supervision of its dental attendant, with whom then rests to a very great extent the condition of the mouth and the subsequent condition of the teeth. Nearly twenty years ago I first gave this subject my attention, and while I had but little opportunity at that time of putting my ideas into practice, as time has gone on I have been fully convinced by results that the operation is a good one, conferring as it does a lasting benefit to my patients and a great deal of satisfaction to myself.

*Age at which to Extract.*—This must be determined by the dentist, according to the requirements of each individual case. My experience is that the age and development of the patient varies somewhat, my cases varying from ten and one-half years to twelve years and possibly a few months, depending usually upon the accelerated or retarded general development of the child. We have all seen cases of dental precocity that were difficult to account for, which accentuates what I have previously said as to the necessity of deciding each case upon its individual merits.

I would strongly urge that this operation be performed from four to six months prior to the eruption of the second permanent molar. The time can be determined by the eminence and rounding of the superimposed tissue over this tooth; an idea can also be formed as to the near or remote approach of the second permanent molar by puncturing the gum with a fine, sharp-pointed exploring instrument after cocain has been applied. This means of diagnosis is rarely required, as the objective symptoms incidental to the eruption of a molar tooth are usually a sufficient guide when to operate.

After deciding upon this operation, it is imperative that all four of the first permanent molars be extracted, even though one or two be quite sound. By this means alone can the best general results be attained. By operating at the time suggested, the second permanent molar will travel forward during the process of eruption, and its antagonizing tooth will do likewise, and the result will be the securing of a more perfect articulation than where no regard as to time or completeness is paid in connection with this operation.

*Effects of Extraction.*—Some criticism will undoubtedly be advanced as to the possible modification of the antagonism of the teeth, contraction of the dental arch, shortening of the bite, etc. I can say only that the cases I have operated upon speak more eloquently than I can as to these points. In no case have I noticed any change in the features or contour of the face (this is undoubtedly what would occur were the dental arch contracted by the extraction of these teeth), but this is prevented by the second permanent molars rapidly assuming the position of the extracted teeth. As to any material change taking place in the occlusion of the second and third molars, thereby decreasing their efficiency, I have not yet discovered. We all know that an ideal articulation is practically one of the creations of our own imaginations. What may be an ideal to one person would not be to another, and ideals change with time and circumstances. What may be considered an ideal dentition at twelve years of age, might be an incongruity at forty, hence, time, circumstances and surroundings must be considered in connection with our ideal dental armament. Therefore I contend that the nearest approach to an ideal condition of the mouth at any age is where its dentition is in the best condition to resist decay, to be in the most effective condition for mastication, and at the same time to be the least possible trouble to both patient and dentist. If my contention is correct, then the operation which I advocate answers these requirements better than any other method of procedure with which I am acquainted.

*Cases from Practice: Case 1.*—Mr. A., aged eleven years, first inferior molars imperfectly developed, large anterior approximal cavities, grinding surfaces honeycombed by decay, first superior permanent molars imperfectly developed but not decayed. Child fairly well nourished, growing rapidly. Family history, from a dental standpoint, bad—father averaging more than one filling per tooth, has several artificial crowns and several extractions; mother wearing full upper and lower artificial dentures; elder brother had two or three fillings in all teeth except two, which were crowned; elder sister practically a *replica* of the foregoing. After considerable argument I prevailed upon the father to allow the extraction of the four molars; he demurred very much at the extraction of the two upper ones, but I insisted on the extraction of all or none. Eight years after I put a small gold filling in a fissure in the second left superior molar, and three years later a similar filling in the opposite tooth. I found the articulation practically perfect. These were the only dental operations required in eleven years, and to-day he is the only member of his family who has good teeth and a really comfortable dentition, although apparently of the same type as his father.

*Case 2.*—Miss B., aged eleven and a half years, child well nourished, growing rapidly. Condition of teeth: Ten fillings in various stages of efficiency in the four first permanent molars, with cavities in the approximal surfaces of the first left inferior bicuspid. Family history, from a dental standpoint, not good on maternal side; do not know condition of father's teeth. Mother's required much filling; brother, about two years her junior, has required twenty fillings in his teeth during the past seven years. This latter patient, I may say, was not under my care when I could have extracted his first permanent molars to advantage. Another brother, three years her junior, required five fillings in his first permanent molars in five years, and four fillings in other teeth. A still younger brother, for whom I extracted the first permanent molars, has required six fillings in the other teeth in five years, while Miss B. has required only five fillings since the extractions. I would say in respect to these children, that they are all well nourished, live in the country, are well developed and all well above the average height, and their teeth are apparently of the same type and quality.

*Case 3.*—Miss D., aged about ten and a half years. When upper molars were extracted, patient went away to school, and while there had operation completed, but only after allowing some months to elapse. Family dental history bad on paternal side, father wearing full upper and partial lower dentures. Condition of teeth prior to operation, imperfectly developed and rapidly breaking down. During five and a half years after extraction of upper molars but two small fillings have been required on palatal surface of superior lateral incisors. The delay in extracting the lower teeth has modified the occlusion as compared with the other cases, leaving a large undesirable interproximal space. Present condition of mouth very good.

*Case 4.*—Miss E., aged about eleven years, required ether, as the teeth were so badly broken down. Family history, from a dental standpoint, bad, father and mother having worn partial artificial dentures for the past fifteen years; elder brothers and sisters especially requiring continuous dental attendance. Patient of highly nervous temperament and advanced mental development for her years, rendering the proper preparation of cavities for filling practically an impossibility. The first permanent molars I had filled many times with cement and gutta percha, also with copper amalgam, only to see them break down again about the filling and at other points. The remaining teeth are of a frail, delicate nature, and owing to the natural arrangement of the upper ones, cavities which are *replica* of the father's, have formed on the approximal surfaces of the incisors which I have filled. The record of the case shows that in about four years thirteen fillings were required in the four first permanent molars, owing to the causes already mentioned, as well as nine fillings in the other teeth. The present condition of the mouth is better than it has ever been, but not quite satisfactory, owing to the great tendency of the teeth to disintegrate, occasioned by their frail development.

To summarize in regard to this operation, I would say it has proved a good one in my hands, looked at from any standpoint, as I feel that our first duty to our patients is to put their mouths in the best and most lasting comfortable condition possible, securing to them at the same time the most serviceable and effective masticating surfaces, in conjunction with an immunity from the requirements of constant subsequent dental operations. These are *not* specially selected cases, and have, I hope, demonstrated the possibilities of this operation, *when performed at the right time*, to be as claimed for it in the title of the paper. This operation is *not* of universal application, but in careful hands and under proper conditions will benefit the patient more, and probably reflect as much credit upon the operator as any with which I am acquainted. At the risk of repetition, I will finally urge *the necessity of making the operation complete at the right time.—Items of Interest, Jan.*, 1899.

# PRACTICAL PLACE.

## The Omission of a Comma.

A newspaper proprietor was recently sued for damages by a patent medicine man for an error which was made in printing a testimonial. By the omission of a comma after the word "death," a testimonial was made to read thus: "I now find myself cured, after being brought to the very gates of death by having taken only five bottles of your medicine."—*Quart. Med. Journ.*, 7, 100, after *Med. Age*, 1898.

## Deodorized Tincture of Opium for Peridontitis.

During the existence of acute peridontitis, or in the process of abcess formation where it is difficult to give relief by surgical means other than extraction of the tooth, eight to ten minim doses of deodorized tincture of opium will give prompt relief, and is free from many of the objections of morphia.—*Texas Dental Journal.*

## Danger Signal in Chloroform.

R. Lehmann states that if the patient keeps his eyes completely or partially open during the narcosis, and opens them whenever you try to close them, you can expect some accident, more or less severe. This phenomenon was noted twenty-one times in three hundred and twenty-nine anesthesias, and in each one there was either continuous vomiting, arrested respiration, peculiarly protracted agitation, or asphyxia and syncope, requiring artificial respiration.—*Semaine Med. Nov. 2.*

## Pearline in the Laboratory.

One of the indispensables in my laboratory is Pearline. It removes flask grease and other dirt like magic. I also recommend it to those of my patrons who wear plates to cleanse them with; it effectually removes the oily concretions and renders them sanitary.—*Texas Journal.*

## Setting Porcelain Inlays.

Inlays set with Canada balsam, dissolved in benzole, are much more durably fixed in position than when imbedded in a film of oxyphosphate—provided an accurate fit has been obtained.—W. Booth Pearsall, *Quarterly Circular.*

### WARTS.

Regarding these unsightly excresences, a Paris correspondent says: It is now fairly established that the common wart can be easily removed by small doses of sulphate of magnesia taken internally. M. Colrat, of Lyons, states: "Several children treated with three-grain doses of Epsom salts, morning and evening, were promptly cured." M. Aubert cites the case of a woman whose face was disfigured by warts, and who was cured in a month by one and a half dram doses of magnesia taken daily. Another medical man reports a case of very large warts which disappeared in a fortnight from the daily administration of ten grains of the salts —*Practical Druggist.*

### ROOT CANAL FILLING.

Fill canals with powdered asbestos made into a thin paste with a fifty per cent. solution silver nitrate, pumping it into the canal by the aid of a broach wrapped with cotton; protect with Harvard cement. Fill cavity after from forty-eight to ninety-six hours.—W. T. McLEAN, *Dental Cosmos.*

### NEUTRALIZING SULPHURIC ACID.

Prof. Julius Witzel advocates Boennecker's modification of Callahan's method in the use of sulphuric acid for opening pulp canals; that is, the substitution of peroxide of sodium for the bicarbonate —*Ohio Dental Journal.*

### ARREST OF DENTAL HEMORRHAGE.

From 5 to 10 parts gelatine are to be dissolved in 100 parts sodium chloride solution. Liquefy in hot water, saturate a cotton or gauze plug and insert in the alveolus.—Trans., H. PRINZ, in *Ohio Dental Journal.*

### REMOVAL OF AN INLAY MATRIX.

After the matrix is perfectly formed, if it is filled with beeswax just flush, it can be removed from the cavity with a sharp pointed excavator without any danger of changing its shape.—L. M. MATTHEWS, *Items of Interest.*

### PLASTER MODELS.

To produce plaster models that are dense, hard, and that will remain in perfect continuity when exposed to atmosphere, the Heidelberg Plaster Company has added to the water a liberal addition of ammonium triboricum. The firm has had this simple method patented in all European countries, and it is claimed that statuary designs made from this composite material endure the abuse of transportation and exposure without damaging the device. Such plaster might be especially serviceable in molding features to demonstrate the progress of correcting abnormal dental or facial outlines.—Trans. by DR. B. J. CIGRAND, from *Zahntechnische Reform.*

### TO REMOVE PLASTER FROM VULCANITE.

Saturate a pellet of cotton with strong cider vinegar and rub surface coated with plaster and all trace will be removed. I have tried everything appearing in dental journals and that I could hear of, but all to no purpose, until the above proved most effectual—H. C. HEADY, D. D. S.

### PULP DEVITALIZATION IN POSTERIOR TEETH.

To minute particle of arsenic crystals add about double the quantity of alum and a drop of campho-phenique. Take up the mass on a small pledget of devitalizing fiber, which, as it contains morphine, will assist in keeping the tooth quiet. Iodoform will prevent subsequent soreness.—DR. F. C. PAYNE, *Pa. Med. Den. Gazette.*

### PULP NODULES DIAGNOSIS.

There is one sure sign, if you can see the patient when the paroxysm of pain is on, and immediately, before it passes off, tap the teeth, you will always find extreme sensitiveness in the affected tooth until the pain ceases. In a few seconds it passes off and you cannot discover that one tooth is more affected than the other.—DR. J. N. CROUSE, *Dental Review.*

### LOCAL ANESTHETIC FOR EXTRACTION OF TEETH.

Dr. F. N. Brown says he has excellent results from injection of peroxide of hydrogen for the painless extraction of teeth. No bad after-effects.

### FORMALDEHYDE.

It is well to instruct the patient to breathe through the nose while application of formaldehyde is being made. Should any drop on the tongue, cheeks, or lips, swab with cotton dipped in grain alcohol. This will allay the burning sensation.—J. H. HANNING, *Items.*

### A SUBSTITUTE FOR GOLD.

A new metal which seems to have the requisites of gold, while less costly, is composed of

| | |
|---|---|
| Silver | 3.53 |
| Platinum | 2.40 |
| Copper | 11.71 |

It is elastic and takes a most brilliant polish, is not acted on by the fluids of the mouth, and answers the same purposes as gold.—B. J. CIGRAND, *Dental Digest.*

### SETTING CROWNS WITH GUTTA-PERCHA.

Fit gutta-percha on the post and in the root, and get proper adaptation of crown. Dry the root and paint canal with cajeput or eucalyptus; dry a little and paint again with chloro-percha. Paint gutta-percha on post with chloro-percha; warm and drive home.—DR. TAGGART, *Dental Review.*

### CLEANSING THE HANDS.

In removing plaster from the hands after the application of plaster casts, it would be well to remember the fact that syrup of lime is the strongest solution, and that the application of a little sugar to the hands will greatly assist you. The same rule applies to the removal of casts.—*Ga. Jour. of Med. and Sur.*

### LARD AN ANTIDOTE TO STRYCHNINE.

Dr. W. D. Turner relates some original experiments, proving that common lard is a perfect antidote to strychnine. He gives the lard freely by the mouth—ten to twenty ounces. He finds it marvelously effective, even when administered after the convulsions have begun.—*Virginia Medical Semi-Monthly.*

### TO LESSEN THE DANGER OF CRACKING PORCELAIN FACINGS.

Coat the teeth with shellac. Under high temperature this forms a protecting film of carbon on the facing and lessens the danger of cracking.—J. E. NYMAN, *Dental Review.*

### TO PREVENT SEPARATING RUBBER FROM INJURING THE GUMS.

Protect the gum tissue in the interproximate space by building a bridge of gutta-percha or cement from the gingival portion of the cavity across to the next tooth.—C. N. JOHNSON, *Den. Review.*

## To Remove Plaster Impression from Cup.

We have used the following method of removing plaster impression from cup with so much satisfaction that we are prompted to reproduce it. Dr. Battershell, who first made it known, says:

"To remove a plaster impression from the tray quickly without marring tray or breaking the impression, proceed as follows: Directly after removing the impression from the mouth, trim away all surplus plaster which will bind the impression to the tray; place a Bunsen burner upon the center of a folded towel, and over the flame of the burner move the impression, cup down, until it pops loose. This result is effected by the generation of steam between the tray and the impression, and is accomplished in less than a minute's time. The impression falls off unbroken upon the folds of the towel."

## Cleaning Teeth.

This is not so simple an operation as some would make believe, but one requiring time and care, and one that is very important. Here is the way Dr. Potterf, in the *Ohio Dental Journal*, does it: Take a pledget of absorbent cotton, saturate it with alcohol and go over the teeth, cutting all fats and removing starchy foods. Then with a little cotton saturated with a 3 per cent. solution of pyrozone; then with rubber cups or moosehide discs dipped into pyrozone and pumice. After removing all traces of lime deposits, polish off stains; if there are any that do not yield readily to this treatment, touch such stains with compound tincture of iodine, and endeavor to polish off as before; if this does not remove them, touch stains with 10 per cent. solution of trichloracetic acid; this usually removes all traces of stain; then finish with chalk and pyrozone.

## Gum Tissue in Buccal Cavities.

When the gum has intruded into the cervical portion of a cavity, the excess of tissue may be burnt away with a minimum of pain by means of sodium ethylate.—Robertsham, *Dental Record*.

## Fever Blisters.

These troublesome little ulcers, which often interfere with dental operations, especially when located in the corners of the mouth, are promptly cured by the application of resinol ointment.—W.

### GLYCERINE AS A MEDICINE.

This simple and agreeable remedy is receiving more attention from the profession as an internal medicine. It exerts a beneficial influence on nutrition, and may with advantage be administered in the place of cod-liver oil. Certainly, reports of its action in phthisical cases as palliating many distressing symptoms are of importance. It reduces night sweats, improves weight and appetite, and contributes to refreshing sleep.

A widower was encountered extremely lachrymose.

"But you have told us a hundred times that you had a holy horror of your wife."

"That is true, but one still suffers after having had a bad tooth drawn."—From the French.

### WHERE PYROZONE IS EFFECTIVE.

A little 25 per cent. solution of pyrozone on some cotton wound on a broach and put up the canal will instantly stop the bleeding from extirpated pulp so you could proceed to dry the canal and fill it at once. When trying to fit a crown to the root of a tooth, and the gums are bleeding and oozing, so that you cannot get it dry enough to attach the crown, apply 25 per cent. pyrozone on a lock of cotton. —L. WEST, in *Items.*

### EXTRACTING SUPERIOR CUSPIDS.

Sometimes the upper canines are very difficult to extract. When extracting the upper teeth for a plate, remove the teeth on each side of the canine and grasp it at the sides. The sides being more flat, the forceps will not slip, and the tooth can be easily rotated.—OTIS TROTTER, D. M. D.

### SILVER NITRATE IN ROOT CANALS.

Dr. L. G. Noel advocates the use of nitrate of silver as a disinfectant in canals of teeth. After applying the dam the canal is filled with the finely pulverized crystals on shreds of cotton. This is left a week or two, when he introduces his root-filling. In small canals he frequently leaves a small twist of cotton, containing a few of the crystals. He finds it especially useful in filling roots of deciduous teeth.—*Headlight.*

### How to Manipulate Amalgam and Cement.

Having the cavity prepared, the walls are lined with a sticky mixture of cement, taking care that it fastens itself well to the tooth. A soft mixture of oxyphosphate and amalgam, not too closely intermingled, and which will be sufficiently adhesive to stick well to the first filling, is then added; lastly, the whole is covered with clean amalgam, which will adhere firmly to the second mixture and make a cover to it that will keep out all moisture and preserve the under fillings indefinitely. The materials can all be mixed at one time, the amalgam first, and the operation is not at all difficult to perform.—*Ohio Dental Journal.*

### A Rubber Substitute from Corn.

We have received a sample of a rubber substitute made from corn. It is made from the oil derived from corn, and by vulcanizing it in connection with an equal quantity of crude India rubber, a substitute is produced; which, for certain purposes, is equal to the best gum rubber at a greatly lessened cost. The new corn rubber is claimed to possess all the essential qualities of Para rubber, including resiliency, and the discovery has been hailed with delight in the corn-growing States of the West. The manufacturers claim that the fact that corn oil does not oxidize readily makes this product of great value, since it is not affected by oxidation, so that products manufactured from it will always remain pliable and do not crack, as those made from other substitutes. This interesting substitute for rubber is very dark brown, or black, and it easily rubs off in light brown rolls. It is at present sold as low as six cents a pound. It is manufactured by the Glucose Sugar Refining Company, of Chicago, Ill.—*Scientific American.*

### To Allay Pain after Tooth Extraction.

For the last five years, after every extraction followed by pain, I have wiped out the alveolus with concentrated carbolic acid. For this purpose I wrap a little cotton wool round the points of a pair of curved tweezers, dip it in acid, carbol. c. p., and wipe out every alveolus properly. The success is almost complete, and pain having lasted for hours is instantly allayed. The patient should rinse the mouth immediately after the alveolus has been wiped out.—*Ohio Dental Journal.*

# THE
# Dental Office and Laboratory.

FOURTH SERIES.

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## NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The sixteenth annual session of the National Association of Dental Faculties was held in Niagara Falls, commencing Friday, July 28, 1899.

The following colleges were represented, as noted :

Birmingham Dental College, Birmingham, Ala.—T. M. Allen.

University of California, Dental Department, San Francisco, Cal. —A. A. d'Ancona.

Colorado College of Dental Surgery, Denver, Col.—J. S. Jackson.

University of Denver, Dental Department, Denver, Col.—A. H. Sawins.

Columbian University, Dental Department, Washington, D. C.—J. R. Hagan.

Howard University, Dental Department, Washington, D. C.—A. J. Brown.

National University, Dental Department, Washington, D. C.—A. D. Cobey.

Atlanta Dental College, Atlanta, Ga.—H. R. Jewett.

Dental Department of Atlanta College of Physicians and Surgeons, Atlanta, Ga.—Frank Holland, S. W. Foster.

Chicago College of Dental Surgery, Chicago, Ill.—Truman W. Brophy.

Northwestern University Dental School, Chicago, Ill.—Theo. Menges.

Indiana Dental College, Indianapolis, Ind.—George E. Hunt.

State University of Iowa, Dental Department, Iowa City, Ia.—W. S. Hosford.

Louisville College of Dentistry, Louisville, Ky.—H. B. Tileston.

Baltimore College of Dental Surgery, Baltimore, Md.—M. Whilldin Foster.

University of Maryland, Dental Department, Baltimore, Md.—John C. Uhler.

Boston Dental College (Tufts College Dental School), Boston, Mass.—Chas. P. Thayer.

Harvard University, Dental Department, Boston, Mass.—Thomas Fillebrown.

College of Dental Surgery of the University of Michigan, Ann Arbor, Mich.—J. Taft, N. S. Hoff.

Detroit College of Medicine, Dental Department, Detroit, Mich.—G. S. Shattuck.

University of Minnesota, Dental Department, Minneapolis, Minn.—W. P. Dickinson.

Kansas City Dental College, Kansas City, Mo.—J. D. Patterson.

Western Dental College, Kansas City, Mo.—D. J. McMillen.

Marion-Sims College of Medicine, Dental Department, St. Louis, Mo.—J. H. Kennerly.

Missouri Dental College, St. Louis, Mo.—A. H. Fuller.

University of Omaha, Dental Department, Omaha, Neb—A. O. Hunt.

University of Buffalo, Dental Department, Buffalo, N. Y.—William C. Barrett, R. H. Hofheinz.

New York College of Dentistry, New York City.—Faneuil D. Weisse.

New York Dental School, New York City.—John I. Hart, Roderick M. Sanger.

Cincinnati College of Dental Surgery, Cincinnati, O.—G. S. Junkerman, W. T. McLean.

Ohio College of Dental Surgery, Cincinnati, O.—H. A. Smith.

Western Reserve University, Dental Department, Cleveland, O.—H. L. Ambler.

Ohio Medical University, Dental Department, Columbus, O.—Otto Arnold.

Pennsylvania College of Dental Surgery, Philadelphia, Pa.—Wilbur F. Litch.

Philadelphia Dental College, Philadelphia, Pa.—S. H. Guilford.

University of Pennsylvania, Dental Department, Philadelphia, Pa.—James Truman, Edward C. Kirk.

Pittsburg Dental College, Pittsburg, Pa.—Walter H. Fundenburg.

School of Dentistry, Central Tennessee College, Nashville, Tenn.—G. W. Hubbard.

University of Tennessee, Dental Department, Nashville, Tenn.—L. G. Noel.

Vanderbilt University, Dental Department, Nashville, Tenn.—Henry W. Morgan.

Tacoma College of Dental Surgery (North Pacific Dental College), Portland, Ore.—Geo. H. Chance.

Milwaukee Medical College, Dental Department, Milwaukee, Wis.—Geo. V. I. Brown.

Royal College of Dental Surgeons of Ontario, Toronto, Canada.—J. B. Willmott.

The treasurer reported that the Dental Department of Tennessee Medical College, of Knoxville, Tenn., was no longer in existence, having been absorbed by another school.

The Tacoma College of Dental Surgery, having removed to Portland, Ore., was given authority to change its name to North Pacific Dental College.

The trustees of Boston Dental College accredited Dr. C. P. Thayer as delegate to explain to the association that they had transferred the institution, with all its appurtenances, to Tufts College, and to request that the Tufts College Dental School be permitted to make application for membership at this meeting. On motion, it was ordered that Tufts College Dental School be accepted as a continuance of the old college, and that the change of name be approved.

The applications for membership of the following schools, having been reported as regular by the Executive Committee, lie over for one year for final action:

Medicc-Chirurgical College of Philadelphia, Dental Department, Philadelphia, Pa.

Central College of Dentistry, Indianapolis, Ind.

College of Dentistry, University of Southern California, Los Angeles, Cal.

Illinois School of Dentistry, Chicago, Ill.

Washington Dental College and Hospital of Oral Surgery, Washington, D. C.

Keokuk Medical College, Dental Department, Keokuk, Ia.

The Committee on Text-Books reported recommending that the following be adopted: "Anatomy and Histology of the Mouth and Teeth," by I. N. Broomell, D.D S.; "The Practice of Dental Medicine," by Geo. F. Eames, M.D., D.D.S.; "Comparative Dental Anatomy," by A. H. Thompson, D.D.S. (recommended last year in proof); "Methods of Filling Teeth," second edition, by R. Ottolengui, M.D.S.

The committee had also examined "Chemistry and Metallurgy

Applied to Dentistry," by Vernon J. Hall, Ph. D.; and while admirable, and containing many excellent features, the committee believed it unwise to recommend it as a text-book, inasmuch as there are already two excellent works on the same subject on the list.

Of "Interstitial Gingivitis, or so-called Pyorrhea Alveolaris," by Eugene S. Talbot, M.D., D.D.S., the committee reported that it contained evidence of laudable and extensive research, but the subject is still a matter of so much controversy and diversity of opinion as to make undesirable a text-book upon it at the present time.

The committee also suggested the removal of Clifford's "Manual of Recitations," adopted in 1892, and Burchard's "Compend of Pathology," adopted in 1897.

The following resolutions, laid over under the rules from 1898, were adopted:

Offered by Dr. Allen:

*Resolved*, That it is the sense of this association that the present method of bestowing scholarships is no longer called for, and is detrimental to the best interests of the profession, and that hereafter no college of this association shall grant either free or beneficiary scholarships not absolutely made obligatory in their charter.

Offered by Dr. Barrett:

*Resolved*, That it shall be the duty of the secretary of this association to present at the opening of each annual session a list of the colleges, members of this association, who have been unrepresented for two years, that proper action may be promptly taken.

The resolutions of Drs. Allen and d'Ancona concerning the attendance of students were substituted by the following, offered by Dr. Willmott, which was adopted:

*Resolved*, That students in attendance at colleges of this association, to obtain credit for a full term, must be and remain in attendance until the close of the session.

In accordance with this action, Rule 4 was amended to read as follows:

4. In cases where a regularly matriculated student, on account of illness, financial conditions, or other sufficient cause, abandons his studies for a time, he may re-enter his college at the same or a subsequent session, or where, under similar circumstances, he may desire to enter another college, then with the consent of both deans he may be transferred.

Rule 9 was amended to read as follows:

### ADMISSION OF UNDERGRADUATES OF MEDICINE.

9. Undergraduates of reputable medical colleges who have regularly completed one full scholastic year of a six months' term and passed a satisfactory examination in the studies of the freshman year, may be admitted to the

junior grade in colleges of this association, subject to other rules governing admission to that grade.

The Committee on Conference with the National Association of Dental Examiners reported, as the result of several conferences held with a similar committee from the Examiners' Association, that an agreement had been reached concerning the matters which had been in controversy between the two associations for several years. The report was adopted. [The basis of the agreement, with some account of the difficulties referred to, will be found at the end of this report.]

The following resolution was unanimously adopted:

*Resolved*, That the thanks of the National Association of Dental Faculties are due to the Chicago College of Dental Surgery for the courage and persistence with which it has maintained what we believe to be a correct principle, and that we regard the placing as unrecognized and disreputable in the newspapers and otherwise of one of the oldest and best of our professional teaching institutions an injustice that demands complete rectification.

Dr. Barrett offered the following, which were adopted:

*Resolved*, That the commonly accepted Code of Ethics regulating the conduct of practitioners in their relations with other practitioners be approved and made obligatory upon the dental colleges of this association in their relations with other colleges.

*Resolved*, That the section of the Code which refers to public advertisements be interpreted to forbid the advertising of the infirmaries of dental colleges in any manner that might be construed to be unprofessional if done by a practitioner.

*Resolved*, That as dental colleges should in every practicable manner impress the importance of ethical conduct upon their students, and should themselves set a good example in this particular, their public advertisements should be confined to a simple statement of the location of the schools, the date of opening and closing, with any other really essential facts, all details being reserved for the annual announcement, which itself shall not violate the usually accepted ethical tone.

Dr. Taft offered the following:

*Resolved*, That a commission, consisting of three persons, be appointed, whose duty it shall be to take cognizance of, investigate, and advise with any parties contemplating the establishment of a new college or the reorganization of an old one.

In the performance of the duties of this commission it shall be competent to take into consideration the following points, viz:

The consideration of any proposed new dental college; taking into account all the circumstances that attach to it; the motive that prompts such an organization; the need for it; the proposed locality; the character and ability of those who propose to conduct it; the sufficiency of the resources that may be available for its establishment, and whether, on the part of the promoters, there is a just appreciation of that which is required for such an institution.

The attainment of full knowledge on these points would enable the Commission to advise wisely.

It would be the duty of this Commission to report to this body at each annual meeting.

The resolution was adopted, and it was ordered that the commission be elected with the other officers.

The following amendment to the constitution was adopted:

Change Article V to read as follows:

Article V. The Executive Committee shall consist of five members, three of whom shall be elected annually; the two receiving the higher number of votes shall hold office for two years each. The Executive Committee shall have power to designate the time and place of meeting, make preparations for same, and transact such other business as usually devolves upon such committee. That five members be elected this session, the two receiving the higher number of votes to serve for two years, the other three for one year each.

On motion of the Executive Committee, it was ordered that colleges making application for membership in this body shall have present a copy of their annual announcement, and that a duly authenticated representative of the school be present at the meeting; without which the application shall not be considered.

It was decided that the change from six to seven months' terms, which goes into effect with the session of 1899–1900, should apply to all students in colleges of the association, even though the students may have previously attended under the six months' rule.

On motion of Dr. Barrett, it was ordered that a Committee on Law, to consist of three members, be elected to serve as a standing committee, which shall be authorized to levy such assessments upon the members of the association as may be necessary for the payment of past legal expenses and such as may accrue in the future in the suppression of the issue of fraudulent diplomas. Such assessments to be lodged with the treasurer, and paid upon the order of the Committee on Law. It was also ordered that all legal matters which may arise in connection with the National Association of Dental Faculties shall be referred to this committee.

The Committee on Foreign Relations, in concluding the report of its work for the year, offered the following resolutions, which were adopted:

*Resolved*, That the Foreign Relations Committee be instructed to take any steps which they may deem advisable for the putting an end to the issuing of fraudulent and irregular degrees, and to this end are authorized during the coming year to use any funds in the treasury of the association upon the approval of the Law Committee.

*Resolved*, That the European Advisory Board of the Foreign Relations Committee be and is hereby invited each year to send a delegation to attend the annual meeting of this association, and that such delegation be accorded seats in the meetings of the association, with all the privileges of debate.

*Resolved*, That no student coming from Europe shall be received by any member of the association until his credentials shall have been approved by the members of the European Advisory Board for the country from which he claims to come.

*Resolved*, That the Committee on Foreign Relations be authorized to appoint Advisory Boards for countries outside of Europe, whenever in their judgment it is advisable to do so, and report any such action at the next succeeding meeting of this association.

*Resolved*, That the Foreign Relations Committee be given jurisdiction in all foreign American dental educational matters, subject always to the approval of the National Association of Dental Faculties, to which a full written report shall be submitted annually.

Following are the members of the European Advisory Board, so far as appointed :

Great Britain—Wm. Mitchell, W. E. Royce, and B. J. Bonnell.

Holland and Belgium—J. E. Grevers, Ed. Rosenthal, and C. van de Hoeven.

Denmark, Norway and Sweden—Elof Forberg.

Germany—W. D. Miller, C. F. W. Bodecker, and — Hesse.

Italy and Greece—Albert T. Webb, Tullio Avanzi, and A. V. Elliott.

France—J. H. Spaulding, I. B. Davenport, and G. A. Roussel.

Spain and Portugal— — Purtuondo, Florestan Aguilar, and — Thomas.

Switzerland and Turkey—L. C. Bryan, Theo. Frick, and Paul Guye.

Japan, China, and Corea—Louis Ottofy.

Australia and New Zealand—Alfred Burne.

The following resolution, offered last year, was again laid over for another year:

Offered by Dr. Hosford:

*Resolved*, That a four years' course in a reputable college leading to the degree of A. B., Ph. B., or B. S., or four years of biological work, be accepted as one year's credit in the colleges of this association, subject to other rules governing admission to second year grade.

*Resolved*, That students matriculated in both a collegiate and dental department of a university, having completed the work of the first year in dentistry during the four year collegiate course, may, on graduation with collegiate degree, be given full credit for one year in colleges of this association.

The following, offered by Dr. Foster, was referred to the Executive Committee, to be reported upon next year:

*Resolved*, That when a student fails in any part of the requirements for obtaining his final degree, such student must hold over till the next regular course, during which time he may re-enter and remove such conditions by completing his work and can only apply for his degree at the close of term as announced in the catalogue of such school.

The following resolutions lie over under the rules till next year:

Offered by Dr. Barrett:

To change Rule 1 to read as follows:

PRELIMINARY EXAMINATIONS.

1. The following preliminary examination shall be required of students seeking admission to colleges of this association:

*a.* The minimum preliminary educational requirement of colleges of this association, for the session of 1901-1902, shall be a certificate of entrance into the second year of a high school, or its equivalent, the preliminary examination to be placed in the hands of the State Superintendent of Public Instruction.

*b.* Nothing in this rule shall be construed to interfere with colleges of this association that are able to maintain a higher standard of preliminary education.

Offered by Dr. Weisse:

*Resolved*, That Rules 8, 9 and 10 of the Code of Rules be rescinded, and the following be substituted therefor:

That advanced standing to the junior or senior classes of institutions of this association shall only be upon certificate of one or two sessions' attendance, respectively, in an institution belonging to this association.

Offered by Dr. Truman:

*Resolved*, That members of this association violating the rules of this body shall, upon conviction, be fined not less than one hundred dollars for each offense, or be subject to censure, suspension, or expulsion, at the pleasure of the association.

Offered by Dr. Barrett:

*Resolved*, That the Executive Committee be instructed that, except under what they shall decide to be unusual or extraordinary circumstances, and which in their report they shall detail to the association, they shall not report favorably any application for the admission of a new college in the following instances:

1. When there has not been actually secured and bought or leased for a term of not less than three years, and fitted up with all required equipments, a sufficiently commodious and convenient building, entirely adequate to the needs of not less than one hundred students. Such equipment shall include not only the laboratories, infirmaries, etc., with proper chairs, benches, and all apparatus required for complete practical dental instruction, but the rooms and fittings necessary for scientific training, with apparatus and equipments necessary for the proper teaching of bacteriology, histology, microscopy,

chemistry, and such other scientific studies as should form a part of an advanced dental curriculum of study.

2. When the character and attainments of its faculty, which must already have been named, and a list of the members of which with the respective positions they are to occupy shall be embodied in the application presented, are not such as to give assurance that the school will be conducted in a manner to reflect credit upon the dental profession, and to insure complete and adequate instruction in all branches of a broad dental curriculum of study.

3. When the proposed dental college or department is evidently and unmistakably intended primarily for the purpose of sustaining or strengthening another existing institution with which it is to be allied.

4. When the city or town in which such college is to be located already contains a college, or colleges, for dental teaching, of acknowledged efficiency, liberal character, and ethical standing, sufficient in their opinion for the promotion of the best interests of dentistry and the dental profession.

Offered by Dr. Guilford:

*Resolved*, That while examinations for progress should continue to be held annually upon the subjects taught during the year, no final examinations shall be held until the close of the third year.

Dr. Taft from the Committee on Curriculum, submitted as the report of his committee the following:

### SCHEDULE OF STUDIES.

| FIRST YEAR. | Hrs. Per Wk. | SECOND YEAR. | Hrs. Per Wk. | THIRD YEAR. | Hrs. Per Wk. |
|---|---|---|---|---|---|
| Anatomy and Dissection | 2 | Anatomy, Regional | 1 | Therapeutics | 1 |
| Physiology | 2 | " Comparative | 1 | Pathology | 1 |
| Chemistry, Inorganic | 2 | Physiology | 2 | Surgery, General | 1 |
| Chemistry, Laboratory | 4 | Chemistry, Organic | 2 | " Oral | 1 |
| Dental Anatomy | 2 | " Laboratory | 4 | Jurisprudence | ½ |
| Prosthetic Technic | 10 | Metallurgy, Didactic | 1 | Orthodontia, Didactic | 1 |
| Histology, Didactic | 4 | Metallurgy, Laboratory | 2 | Orthodontia, Practical | 1 |
| " Laboratory | | Materia Medica | 1 | Operative Dentistry | 2 |
| Materia Medica | | Operative Technic | 4 | Prosthetic Dentistry | 2 |
| Comparative Anatomy | | Bacteriology, Didactic | 4 | Electricity | |
| | | Operative Dentistry, Didactic | 2 | Ethics | |
| | | Orthodontia Technic | 1 | History | |
| | | Pathology | 2 | | |
| | | Orthodontia, Didactic | | | |

### INFIRMARY.

| | | | |
|---|---|---|---|
| Prosthetic Dentistry | 5 | Prosthetic Dentistry | 6 |
| Crown- and Bridge-Work | 3 | Operative Dentistry | 15 |
| | | Crown- and Bridge-Work | 4 |

The following were elected officers for the ensuing year: Jonathan

Taft, president; B. Holly Smith, vice president; J. H. Kennerly, secretary; Henry W. Morgan, treasurer; S. W. Foster, J. B. Willmott, executive committee for two years; H. B. Tileston, Theo. Menges (chairman), S. H. Guilford, executive committee for one year; W. T. McLean, J. D. Patterson, W. S. Hosford, *ad interim* committee; Truman W. Brophy, Edward C. Kirk, Albert H. Fuller, commission on proposed new colleges; A. O. Hunt, Henry W. Morgan, W. C. Barrett, committee on law.

The newly-elected president appointed the following committees: T. M. Allen, W. S. Hosford, W. P. Dickinson, G. S. Shattuck, J. G. Templeton, committee on schools; A. J. Brown, John I. Hart, Thomas E. Weeks, Edward C. Kirk, Thomas Fillebrown, committee on text books; W. C. Barrett, J. D. Patterson, T. W. Brophy, S. H. Guilford, H. W. Morgan, committee on foreign relations; N. S. Hoff, G. V. I. Brown, committee to secure papers to be read at the next annual meeting; S. H. Guilford, W. F. Litch, N. S. Hoff, A. H. Fuller, C. L. Goddard, committee on curriculum.

The Executive Committee reported that it had decided to adopt the suggestion of Dr. Willmott to convene the next meeting on the day of the adjournment of the National Dental Aasociation, at the same place.

Adjourned to meet at Old Point Comfort, Friday, June 29, 1900.

An important fact in connection with the meeting of the National Association of Dental Faculties was the presence of three of the members of the European Advisory Board of the Committee on Foreign Relations: Drs. Lyman C. Bryan, of Basel, Switzerland; John E. Grevers, of Amsterdam, Netherlands, and William Mitchell, of London, England.

Dr. Grevers, in speaking of the reception to advanced standing of students from foreign countries, probably struck the keynote of the entire situation. He was impressed, he said, with the idea that the foreigner comes to this country to study dentistry for one of two reasons: First, as a graduate, or as one having fulfilled the requirements in his own country, who desires to still further develop his manipulative ability by the acquirement of American methods; or, second, because he cannot fulfill the requirements in his own country, and hopes to secure something here which will enable him to return home and practice. So that if the applicant from a European country is not supplied with the proper certificates the colleges should be cautious about receiving him to advanced standing.

The proceedings of the late meeting were varied by two pleasant, albeit unusual, incidents.

The first of these was a trolley ride of the members of the association and their friends to Buffalo, twenty-five miles away, and return, as the guests of the Dental Department of the University of Buffalo. Arrived at Buffalo they were taken to the college building, where an ample collation was served, accompanied by several felicitous speeches. The various departments of the college were then inspected and pronounced good, after which the party again boarded the trolley cars and were taken to view the grounds where the Pan-American Exposition is to be held two years hence. Then came the return to Niagara Falls, which was accomplished without incident and without fatigue, every one expressing his gratification over the outing.

The second was of the same nature, but involved a visit to a foreign land. The Royal College of Dental Surgeons of Ontario invited the members of the Faculties Association and also those of the National Association of Dental Examiners to visit the college and view the city of Toronto. In response about seventy-five persons took the train at Niagara Falls for Lewiston, where they boarded the steamer for the journey across Lake Ontario to Toronto. Arrived here a short walk brought them to McConkey's, where a fine collation was served and appropriately disposed of. Tally-hos and carriages then conveyed the party to various points of interest in the city, among others Parliament House, where they alighted and spent a short time admiring its beauty of architecture and internal arrangement and fittings. A short drive brought them to the Royal College of Dental Surgeons of Ontario, where they were assembled in the main lecture room, and speeches of felicitation and good-will followed; after which the visitors circulated through the building, inspecting the equipment of the college and having explained to them the methods of instruction in various branches. It was the universal opinion that the school was admirably equipped for the systematic instruction of students of dentistry. The entrance to the college was tastefully draped with the flags of Great Britain and the United States. From the college the party proceeded to the Foresters' Temple Cafe, where a second collation was served; after which they were driven to the steamboat landing. As the vessel moved off three cheers for the Royal College of Surgeons were given with a will. The return journey was made without mishap, and the excursionists unanimously declared they had had one of the most delightful outings of their lives.

The members of the dental profession will be glad to learn that the differences existing for some years between the National Association of Dental Faculties and the National Association of Dental Examiners have been reconciled. These differences have been the cause of much friction between the two bodies.

The cause of the trouble was the refusal of the colleges to accept various rules which have crystallized into what is known as Rule 8 of the code of rules, Section 1 and 2, of the Examiners' Association, because the colleges were not consulted in its framing.

The attempted enforcement of this rule recently led to litigation in the state of Wisconsin. The State Board of Dental Examiners of that state refused to admit to registration the diplomas of the Chicago College of Dental Surgery, the Northwestern University Dental School, the Pennsylvania College of Dental Surgery, the Ohio Medical University Dental Department, the Philadelphia Dental College, and others, on the ground that they did not in their preliminary examination come up to the standard established by Rule 8, and demanded that graduates of these institutions presenting diplomas for registration should submit to examination by the board as to their qualifications to practice dentistry.

This contention of the board was resisted by a graduate of the Chicago College of Dental Surgery, who brought mandamus proceedings to compel the board to accept his diploma. The board moved to quash the proceedings, which motion was denied by the court, with leave to the board to file its answer. The answer was filed, and the case was in that condition at the time of the meeting of the two associations at Niagara Falls on the 28th of July, 1899.

With a view to the adjustment of the difficulty committees of conference were appointed by the two bodies, which, after going over the matters in dispute, agreed on the side of the National Association of Dental Examiners to recommend that Rule 8 be recinded; that all colleges having membership in the National Association of Dental Faculties be placed upon the list of recognized schools, and that all litigation be withdrawn; and on the side of the National Association of Dental Faculties that a new rule governing the preliminary requirements for admission to the college courses should be adopted.

This action was ratified by the associations. The Examiners' Association adopted a new Rule 8, Sections 1 and 2, of which read as below, the remainder of the rule being substantially as before:

Rule 8, new Sections 1 and 2.

"Section 1. Colleges desiring recommendation to the state boards by the National Association of Dental Examiners shall make application for such recommendation through the Committee on Colleges, on blanks provided for that purpose. This rule to apply only to schools making application to the National Association of Dental Examiners for recommendation and such schools as may be dropped."

"Section 2. The following preliminary examination shall be required of students seeking admission to colleges recommended by this association. The minimum preliminary educational requirements of colleges of this association for the session of 1899—1900 shall be a certificate of entrance into the second year of a high school or its equivalents, the preliminary examination to be placed in the hands of the State Superintendent of Public Instruction, adopted by the State Board of Missouri."

The Faculties' Association adopted the following rule governing the preliminary educational requirements of students:

"The minimum preliminary educational requirement of colleges of this association for the session of 1899—1900 shall be a certificate of entrance into the second year of a high school or its equivalent, the preliminary examination to be placed in the hands of the State Superintendent of Public Instruction."

"Nothing in this rule shall be construed to interfere with colleges of this association that are able to maintain a higher standard of preliminary education."

The cause of friction being removed, the disputes which have arisen, there is every assurance, will be speedily adjusted and the two bodies will thereafter work in harmony.

## DENTISTS FOR THE ARMY AND NAVY.

BY THEODORE F. CHUPEIN, D.D.S., Philadelphia.

We have read dispassionately and with much interest, the two papers by Drs. W. T. Stark and Morris I. Schamberg, reproduced in the July, 1899, number of the *Dental Brief*, and conclude that Dr. Schamberg has the best of the argument.

We agree, most forcibly, that there is need for the services of the dentists in both arms of the national service, and that the Hull bill was not designed to force these services on our soldiers and sailors whether they wished them or not; neither was it designed to provide lucrative employment for incompetent graduates of dentistry who were incapable of establishing a practice, but was rather proposed as a humanitarian measure.

We do not combat Dr. Schamberg's statement of the large amount of dental decay among the men of the army; but are somewhat astonished at it, for, from a record we kept for many years while practicing in Charleston, S. C., we noted that among a certain class of patients who sought our services, such as carpenters, bricklayers, laborers, draymen, and such others whose occupation kept them in the "open air," and where avocation was attended with great physical labor, these seldom had need of a dentist, except for the extraction of a tooth; while their wives, daughters or sisters, and such as were employed "in doors," as chamber maids, cooks, seamstresses, etc., invariably had the most miserable teeth. Hence we are surprised that Dr. Schamberg states there was so much dental work needed among the men of the army, whose occupation kept them in the open air.

Dr. Schamberg also states that "one can realize how much work would devolve on a dentist in the care of a regiment of a thousand men." I can truly state that a dentist could scarcely attend to so many, for, from the record above alluded to, we gleaned that our practice occupied us in serving from 400 to 500 persons, certainly not over 500, and at this we were kept *constantly occupied*. Our appointment book did not show engagements two and three weeks ahead, it is true, but our occupation kept us employed five hours daily. Hence we conclude that 1000 patients would be more than one dentist could attend to, unless each patient had but a trifling amount of work to be done.

When we first moved to Philadelphia from Charleston, we made an effort to obtain the position as dentist to Girard College, but when we heard and learned that the appointment expected the dentist to keep the teeth of 1500 boys in order, we resigned the effort to obtain the appointment, as we felt we could not conscientiously fulfil the requirements.

With this knowledge and experience, we feel sure a dentist would have his hands full in caring for the teeth of a regiment of 1000 men.

In the August issue of the *Items of Interest* is a most pertinent article on this subject, by Dr. Homer C. Croscup, of Brooklyn. His experiences, entirely unofficial and kindly, relate how much a dentist is needed in the army, and how much suffering could be saved, and how many valuable teeth could be saved for the officers and men devoting their lives to the honor of our country.

In conclusion, we heartily agree with Dr. Schamberg as to the utility of dentists to the army and navy, and believe that the

Government would be acting humanely and wisely in making such appointments. But the appointments should be judiciously made. No applicant, however strong may be his political recommendation, should be considered *at all*, unless he receive the endorsement of good, honest men *in the practice of dentistry*, "*who have no axe to grind,*" and who would recommend him on his own individual and professional merits.

# THE TWENTY-NINTH ANNUAL MEETING OF THE NEW JERSEY STATE DENTAL SOCIETY.

The Twenty-ninth Annual Session of the New Jersey State Dental Society convened at the Auditorium, Asbury Park, N. J., at 10.45 o'clock, on the morning of July 19th, 1899.

The meeting was called to order by the President, J. Allan Osmun, M.D.S., Newark, N. J., who, after the usual preliminaries, read the annual address. He first referred to matters of purely local interest, then directed attention to the faithful earnestness and the energy of the various committees, who had harmoniously worked together to make the meeting profitable and interesting. He especially commended those who had so well planned in bringing together the many exhibits of special interest to the profession, which comfortably filled the large Auditorium. At this session, for the first time, the meetings were held in a small hall at the north end of the Auditorium, which, while ample for the purpose, brought the members closer together, and proved a far more comfortable arrangement for both speakers and hearers than when, as heretofore, the meeting and exhibit were together in the large hall. This left more room for the exhibits, and permitted a better display.

In referring to this, he spoke of the advantage of this exhibition, bringing together as it does the product of so many who cater to our needs, placing them side by side, so that not only may they be examined and compared as they otherwise could not, but spread out as they are, each exhibitor striving to bring the latest and the best, it affords to the dentist an exceptional opportunity to see what is offered with the utmost convenience and with the least waste of time, and to select, should he so choose, those suited to his needs. Incidentally, it brings the dealers advantageously in contact with their customers.

He then spoke of the "dental shops," deploring the harm that they did in the community, not only by taking their customers' money without returning an adequate equivalent, but also by discrediting faithful dental service and depreciating its value. They may, he suggested, be suppressed to a certain extent by legal means. If the public could be taught to appreciate, and were kept well informed in regard to the advances dental science has made and is constantly making, so that they could discriminate between the empty promises and faulty work of the quack, and the careful and useful services of a skilled practitioner, far more good would be done. To this end he suggested that this Society appoint from among their number capable men to edit and place before the public, devoid of technicalities and stripped of any approach to advertising, the work of the society in so far as it could be so used. To this might be added short papers especially written for this purpose. He further suggested that this be published in the name of the society.

He noted the great expansion of the profession, that it threatened to so broaden that it may soon tax the capabilities of a busy man to compass it. Should this continue it is sure to end in dental specialties. He referred feelingly to the death of Dr. Hayhurst, and spoke of his personal good qualities, and of his interest in and work for the New Jersey State Dental Society, and for the profession at large.

In concluding, he heartily welcomed visiting dentists, extending to them in the name of the society the courtesies of the floor, and an earnest invitation to take part in all discussions.

Dr. C. S. Stockton, in announcing the death of Jeremiah Hayhurst, D.D.S., of Lambertville, N. J., spoke in substance as follows :—

The mention of this name recalls to mind a faithful member who, year after year, without fail, was always with us, and one to whom the success of this society is largely due. He was its first President. In the early years of the society, when contentions arose, he always counselled peace. No unkind word was ever uttered concerning him, nor could there be, as he never uttered one concerning us. Our departed brother was born September 25, 1819, at Middleton, Bucks Co., Pa. He died at Lambertville, N. J., March 22, 1899. He was the son of Thomas Hayhurst, and as a boy worked in his father's pottery. He educated himself, and was for a time engaged in school teaching. Later, he entered the dental profession, graduating at the Pennsylvania College of Dental Surgery, and afterwards served that college as demonstrator and as a member of its faculty. He was one of the organizers of the New Jersey State Dental Society, and for many years chairman of your State Board of Dental Examiners He was a consistent and earnest member of the Society of Friends.

Although for several years in failing health, and afflicted with loss of hearing to almost complete deafness, the end came suddenly and unexpectedly. He was confined to his bed only one week, when he gently fell asleep.

He has showed us how to live; let us then follow in like faithful work, helping, cheering, and making the world brighter and happier for our having lived in it, as he did.

The balance of the morning session was occupied with society business. The society adjourned to meet in the evening, leaving the afternoon free, so that the members might enjoy the various attractions in and around Asbury Park.

At the evening session a paper was read by Dr. E. A. Bogue, of New York City, entitled "Conservative Dentistry as Affected by Cataphoresis and Other Recent Teachings."

He first spoke of the origin of cataphoresis, the various theories advanced regarding it, and of its many applications. He dwelt largely upon the dangers attending its use, and stated that at a recent dental meeting, Dr. Thayer gave fifty-one cases of alleged pulp destruction following its use for obtunding sensitive dentine. While not vouching for this statement, he felt free to say that it was a danger to be guarded, and a very possible result in many cases where it is likely to be used. He disapproved of its use as an obtundent for extirpating a living dental pulp. While it had a very marked effect in lessening the extreme sensitiveness of the dental pulp, he questioned if it could be depended upon to so perfectly anesthise this organ as to permit its removal, and thoroughly fill the space it occupied without serious risk. That it could be done in some cases is admitted. But is it safer? Has it any marked advantage over other and better understood methods? Apart from possible injury to adjacent tissues, there was a still greater risk, that in the haste to complete the operation before sensibility returned, the operator may, either by imperfect removal of pulp tissue, or by too active manipulation, lay the foundation for serious after trouble. Cases have been reported where this had occured in the practice of careful and skillful operators, proving beyond question that it is a danger to be reckoned with in the use of this process for pulp removal.

Regarding its use for obtunding sensitive dentine, taking into consideration its uncertainty, the time consumed in producing the desired result, and the possibility of pulp injury either from the remedy so used, or a too near approach to pulp territory, or even a slight pulp exposure, so much more liable to pass unnoticed when the dentine is under the influence of the drug than when in its normal state, or with its sensitiveness reduced by agents which effect it less profoundly, he questioned very much if it was a real help to conservative dentistry. He did not consider complete insensibility of dentine in small operations desirable; he there needs the warning given him by its sensitiveness, as a guard against possible pulp injury during cavity preparation. This was much more important in deep seated cavities, and those difficult of access. His own experience and observation had convinced him that these objections were of sufficient moment to very much restrict, if not to interdict its use. He preferred to use other means for obtunding sensitive dentine: and for pulp devitalization, arsenic, giving it plenty of time in which to do its work.

He next spoke of pulp mummification, disapproving of its use, as some advocate it in place of pulp extirpation. He, however, recognized that many cases are met with where, from the position of the teeth, the peculiar curve of its roots, or from other causes, complete pulp removal and thorough pulp canal filling is, to ordinary mortals in the dental profession, practically impossible. In such cases the introduction into the pulp cavity or pulp canal of some agent which will retard or render improbable those changes which would otherwise later on give rise to trouble, he considered a desirable aid to conservative dentistry.

In conclusion, he said that he did not consider cataphoresis ot much use to a busy man. To one with little to do it may help to fill up the time. He begged leave to remind such, however, of the well-known couplet—

"Satan finds some mischief still,
For idle hands to do."

The reading of the paper was followed by an animated discussion, which in the main, in so far as it referred to the subject of the paper, rather confirmed the views of the essayist.

Adjourned.

Thursday, July 20, was termed "A Porcelain Session," the morning having been set apart for papers and discussions upon the use of porcelain for inlays and for restorations other than those properly belonging to prosthetic dentistry. The idea of bringing together three gentlemen who were acknowledged experts in this line, for the purpose of presenting their methods in carefully written papers, following this by a discussion, during which those who had practiced it might add those little details experience alone can give, and others who desired more light could query and question, was indeed a happy one. To make it more complete, it was so arranged that the afternoon clinic should be mainly occupied by these essayists demonstrating their various methods. During the morning's discussion they had learned wherein their hearers had failed to fully comprehend the ideas their papers were intended to convey, and were thus prepared to give those points more attention in the practical demonstration. Taking it all in all, it was an excellent idea, well conceived and well carried out. It proved exceedingly interesting and instructive.

The first paper, entitled "The Value of High Fusing Porcelain in Contour Fillings," was by Joseph Head, M.D., D.D.S., of Philadelphia, Pa.

He first spoke of the various methods and various materials which had been used within recent years in forming non-metallic fillings by fusing them in a matrix, and so made that they will, when completed, fit the cavity and restore the lost portion of the tooth. He gave due credit to Herbst, Land, Williams, and others. He explained the comparative merits of high and low fusing compounds, and was disposed, as the result of his own experience, to give the preference to the high fusing on account of its greater strength, and the facility it affords in forming contours. He invariably uses a metallic matrix, into which the porcelain body is packed and fused. When it can be done he advocates packing the porcelain body in the matrix while it is in the cavity. In many cases, however, especially when the cavity is near the gum line, on account of the blood, saliva, etc., this cannot be done. It is often necessary in such cases, after the matrix has been fitted to the cavity, to heat it to full redness, or to thoroughly wash it, in order to get rid of these impurities before packing in the porcelain body. If the low fusing porcelains recently introduced prove as durable as the high fusing, they are much to be preferred. Gold, which is claimed on account of its greater softness to make a more perfectly fitting matrix than platinum, can then be used. The advocates of platinum claim that they can with it make a perfect matrix; that it permits a readjustment to the cavity after the first baking, during which any warping that may have taken place can be corrected and the edges reburnished into exact contact with the cavity walls, and that they can use a body or enamel of indisputed strength and permanency without investment.

As to furnaces, the gas furnaces of Land or Downie, with a platinum muffle, are quite effective; the highest fusing body can be worked with them perfectly. The use of a bellows, which is necessary, and the smoke, noise, etc., are, however, decided objections. The little electric furnace lately introduced by Ash & Sons, of London, England, is absolutely perfect for the low fusing bodies. It will not fuse the high, it was not built to so do.

For the matrix, he uses platinum foil as soft as he can find, about the one thousand of an inch in thickness, or about number fifty of the usual gauge. In selecting the shade of porcelain for labial cavities it should be exact. In approximal cavities the filling should be considerable lighter on account of the shading between the teeth. In such cavities, pure white, toned with a little yellow, will be, nineteen times out of twenty, the color needed.

In small or simple cavities, enamel alone may be used ; but it is better with large cavities, especially those requiring much contour, to use for the first baking a high fusing colorless body, or a mixture of body and enamel. Small fillings may be completed in one baking, but as a rule better results are attained by not attempting this. It is perhaps best to fairly fill the matrix for the first baking, so as to then have the most shrinkage ; to then readjust it to the cavity and at the same time note where and to what extent additions are needed, and to endeavor to complete the filling in the second fusing. It is quite difficult to accurately match the shade when the porcelain is repeatedly fused, especially with the low fusing variety, as with it a little too much heat changes the color very much. These little details, however, can be learned only by practice and experience. For me to attempt to go into all the minutia would be only perplexing. Each one will in time solve these problems for himself, in his own way ; develop and adopt that method and use those materials and appliances which collectively give him the best results. It is better that it should be so.

Dr. N. S. Jenkins, of Dresden, Germany, followed, and explained "The Jenkins System of Porcelain Inlays," which he has devised and perfected. He did not present a formal paper, but at some length outlined the special features of his method.

W. A. Capon, of Philadelphia, Pa., then read a carefully prepared paper, entitled "The Porcelain Era."

He defined the Porcelain Era, as covering the time wherein porcelain has been applied in operative dentistry to the construction of inlays, sections, or portions of teeth, all porcelain crowns, bridges, etc. While its use for such purposes cannot be considered strictly new, experts in its manipulation having time and again so used it ; yet, we may safely say that such work became generally practical only after certain appliances had been invented and perfected, and their capabilities developed and appreciated. The small furnaces, gas and electric, in so many convenient forms, have rendered practically possible the performance of these beautiful operations by the many, which were a comparatively short time ago possible only, even in their cruder forms, to a very few. Their advent made possible the "Porcelain Era."

He credited Dr. C. H. Land with the invention, in 1884, of the first gas furnace for fusing porcelain, described by him in the *Items of Interest*, October 1886. This furnace was so nearly complete that it is still, for general utility, unsurpassed. The first article on porcelain operations, and the one which may be said to have inaugurated the "Porcelain Era," was written by the same Dr. C. H. Land, and published in the *Independent Practitioner*, August 1886. Dr. Land, in a paper read before the Central Dental Association of Northern New Jersey, August 1887, entitled "Metallic Enamel Coated Crowns and Fillings," described the method he then used in constructing jacketed crowns, fillings, etc. The special feature of the various devises of Dr. Land, and a commendable one, was the large amount of tooth tissue preserved above the gum, making it unnecessary to telescope the root so far below the gum line as to severe or irritate the soft tissues. He noted a marked difference between a large metallic filling and one of porcelain, or a metal shell, enamel coated, which he considered of much importance. In the latter, there was not the constant thermal changes consequent upon the alternate heating and cooling of a large mass of metal, which must exert an unfavorable influence upon the tissues about the teeth.

The kind of dentistry demanded at the present time is one that is least painful, and shows the least. The man who can best do such work has decidedly the best chance to succeed. The judicious use of porcelain will exactly fill this want. If properly done, it will doubtless equal in durability and effectiveness any other form of filling; none are infallible. The objection that the cement washes out, his ten years' experience had disproved. In his judgment, its chance of success in teeth frail or of poor structure was five times greater than that of gold.

The making of porcelain inlays may be classed with the most difficult work the dentist is called upon to perform. Filling with other materials is simply a matter of adding to the form of a tooth without leaving the patient. A porcelain inlay is different. Here you must consider form, shade, the actual making of the material, and also the use of appliances entirely foreign to the work. The matrix or mould of the cavity must be absolutely perfect at the edges. The use of high fusing porcelain requires the use of platinum foil in place of gold. Platinum foil is equally well adapted for either high or low, and may be used without investment; gold, on the contrary, can be used only with the low fusing, and usually requires the support of an investment. The use of either gold or platinum for the matrix is, however, more largely a matter of choice than merit; excellent results may be attained with each.

He preferred to have as few bakings as possible. Repeated baking is not only time wasted, but is apt to change the shade. At the first baking he preferred to use as large a quantity as possible, so as to minimize shrinkage in the second bake. After the first baking the inlay is inserted in the cavity and carefully readjusted. When completed and fully satisfactory, a groove or dovetail is cut in with a diamond or a hard rubber disk (the latter is quite as effective and much less expensive), so as to give a firm hold for the cement. While cementing in place, the rubber dam is not needed, indeed, it is objectionable. When the natural teeth are perfectly dry their color is, for the time being, changed, showing up the porcelain filling in a very disappointing manner at a time when we are most anxious that it shall look its best. It is very pleasant to the operator when the critical patient is unable to distinguish the outline of the filling. Accustomed as they are to conspicuous fillings, accepted only as necessary evils, an absolutely "invisible patch" is a telling card. When the dam is used, extreme care is needed during its removal to avoid displacing the inlay. He much preferred the Flagg system of napkining. For cementing, he preferred a medium to slow setting cement, mixed to a creamy consistency. If the work is approximal, he forces the inlay to place with a wedge shaped stick, allowing it to remain for a short time. After cleaning off the exuding cement, he covers the operation with hot paraffin wax, preferring this to any form of varnish. It is not only more protective and more cleanly, but gives to the tooth and inlay a blended effect that is quite important for the first few hours.

In regard to the two qualities of porcelain, the high and low fusing, he had had most to do with the first, and preferred it. In many cases it is a matter of no moment which is used, but with him, having become expert with the high fusing, he had not yet found in the use he had made of the low fusing sufficient inducement to make any change. In cases calling for large contours and corners, he found a distinct advantage in the high fusing grades. They had a better color, the edges were stronger, and they were less liable to change shade in fusing.

Fusing the porcelain is a very important part of this art. It requires as much practice as any other part, and must be thoroughly mastered to ensure success. In managing the furnace it is far better to depend upon the eye rather than upon the time it has been subject to heat, to determine when the porcelain is sufficiently fused, especially when a gas furnace is used.

Of the many kinds of furnaces on the market, while admitting the many advantages of the electric, he still preferred his little "midget," because it is so quick and reliable. It fuses low fusing body in thirty seconds, high fusing in two or three minutes, and will even "tackle" block body, which is generally conceded to be a severe test.

In conclusion, he cautioned his hearers not to expect immediate success. It was work that imperatively required experience, care and perseverance. Now and again failure must be expected ; but the results, he felt sure, would fully compensate for the effort required to attain them. He closed with a glowing tribute to the earnest, patient, persevering, well-directed labors of Dr. C. H. Land, of Detroit, Michigan, to whom he and the profession was so much indebted for making possible this Era of Porcelain.

The discussion indicated the keen interest taken in the subject before the meeting, and was participated in by those who had more or less experience in the construction of porcelain inlays and like operations, and others who desired information upon various points. At the afternoon clinic, Dr. Joseph Head and Dr. Jenkins demonstrated the practical application of the methods they had described during the morning session. Dr. R. Ottolengui, of New York City, actively assisted. Dr. Capon demonstrated the use of various furnaces, and was kept busy explaining their operation, answering questions, and in every way possible teaching those methods of utilizing porcelain in operative dentistry he had found useful and desirable. The "Porcelain Session" was an unqualified success. All who were concerned in its suggestion, in planning or providing for it, and carrying it out, deserve the highest praise. A clinic such as this was, until some better way can be devised, must ever fall short of the ideal. The operations from beginning to end were exceedingly delicate. The operator, surrounded by a pushing, "anxious to see" crowd, however considerate that crowd may be, or however accustomed or indifferent may be the operator to his surroundings, he is necessarily seriously handicapped. To the lookers on, when hardly one in a dozen can see what they are there to see, and that only for a few minutes at a time of an operation consuming an hour or more, every step of which is important, there is at best a feeling of unsatisfied desire ; while the poor patient, especially on a hot day, is sincerely to be pitied. The surgical amphitheatre of our colleges and hospitals, so well adapted to its special use, would be of little service when the only desirable point of view is close beside the patient, mouth glass in hand. I was much interested while the finished operations were being inspected, in watching one after another, when the filling was pointed out, look incredulously as they managed the mouth glass, and were satisfied only when they had detected the invisible join by passing a delicate instrument over the surface of the tooth. How delicate the sense of touch becomes to an experienced dentist. And how well does this incident indicate the possibilities of the Porcelain Era.

Dr. Thomas Onderdonk, of New York, exhibited an ingenious matrix holder, and explained its use. He made his matrix by cutting a strip of suitable width from a piece of thin German silver, or any preferred pliable metal. This was made of a length sufficient to go around the tooth and leave each end about a quarter of an inch too long. The free ends were placed in an instrument and firmly held by turning a side screw, the matrix was now placed over the tooth and by turning a screw at the end of the instrument it was drawn firmly around the tooth ; the instrument was then bent out of the way. When the filling was completed, by reversing the screws the instrument was liberated from the matrix, which could then be removed by lifting over the tooth or drawing it out sideways as might be most covenient. The Doctor illustrated various methods of making and using matrices. Some he made circular instead of straight, so as to fit conical teeth. These, by means of his little device, were drawn up tight at the cirvical border, while the occlusial edge flared out, making a contoured filling. It seemed a very useful and practical idea.

Dr. W. D. Tennison, of New York, exhibited a series of models illustrating the effect of extracting the first molars. They were nicely gotten up, and neatly labeled to indicate the points they were intended to illustrate.

At the evening session, Dr. I. Norman Broomell, of Philadelphia, read an interesting paper upon "Oral Embryology," illustrated with numerous microscopic and lantern slides from original sections. The character of the paper precludes a synopsis that would do it justice. It was, however, excellent; such a paper as would be expected from this indefatigable histological investigator.

Before finally adjourning the following officers were elected: President, Dr. William Truex, of Freehold; vice president, Dr. F. Edsell Reilly, of Newark; treasurer, Dr. Henry A. Hull, of New Brunswick; secretary, Dr. Charles A. Meeker, of Newark.

The attendance was good, there were fewer visitors than usual, but the number present seemed to be fully up to the average. Quite a large number of new members were received. Taking it all in all, it was a very pleasant and instructive dental meeting.

### THE EXHIBITS.

Johnson & Lund, of Philadelphia, had a very nice display of teeth and dental supplies. I noticed specially their new vulcanizer, The Bar-lock Vulcanizer. It is the most complete and convenient machine that I have seen. The closing device is exceedingly convenient, especially to a dentist who does his own work and desires not unnecessarily to soil his hands. Instead of a screw it is closed by a powerful toggle joint pressing upon the middle of the cover. The cover is so hinged that in closing or in opening it need not be touched. It is lifted into position by a wooden handle that is always cool and clean; when over the machine, by simply pressing down this same handle the cover is firmly pressed in place and securely held. When it is desired to open the machine, by raising this handle the cover is lifted, and by a twist of the hand is thrown down quite out of the way. The force required is so slight, a child might handle it with ease; and yet it is as firmly held as by the cumbersome screw arrangements. The machine is supplied with reliable steam guage, regulator and blow off. It is very strongly made, the boiler being drawn seamless, from a copper disk. It has absolutely no loose parts to be lost or mislaid. They also have as novelties, continuous gum rubber for plates. This is a semi-fluid, looking somewhat like a celluloid preparation. Where it is to be used, the rubber plate is cut away to a depth of about a sixteenth of an inch, much in the same way that they are at times prepared to receive pink rubber to represent the gum, after the case is finished. The case thus prepared is finished and polished; the gum compound is then added, being smeared on with a point, or a nerve broach. It is said to be easily spread, and with such an instrument it may be stippled so as to give it a very natural appearance. It hardens in a few hours. In case of repairs being needed requiring revulcanizing, it must be removed, and renewed.

The Russell Electric Mallet Co., of Monrovia, Md., exhibit a very neat and handy electric mallet. It is by far the most convenient to use of any so far produced. The working parts are entirely enclosed, indeed, are as completely protected as are the works of the best watch. It is simple in construction, easily regulated, and perfectly balanced. They also show an electric root drier and mouth lamp. Both are practical instruments and can be used with the street current, dry cell, or any form of battery. They are about to introduce a "cell tester," a little device costing a dollar and a half, that instantly shows the condition of any one cell of a series. To those using dry cells it will be invaluable. These are liable to give out at any time, and one imperfect cell impairs the efficiency of the whole series.

The S. S. White Dental Manufacturing Co. displayed a general line of their goods.

The Consolidated Dental Manufacturing Co., of New York, exhibited a huge set of teeth, and beside it a Lilliputian set, both mounted upon vulcanite, and near at hand mounted sets of all colors, blue, green, red, yellow and black, to emphasize the fact that they make all sizes and shades. They had also, as a specialty, high fusing porcelain for inlays, etc., and electric furnaces for fusing it ranging in price from thirty to fifty dollars.

The Dental Protective Supply Co. exhibited a neat scale needing no weights, weighing from one to twenty-four grains, intended for weighing alloy and mercury, and also for proportioning a new porcelain for inlays they have just placed upon the market. This porcelain is furnished in six positive colors. It is intended that the operator shall, by mixing these in definite proportions, make his own shades. It is a medium fusing grade, and they think it will be more satisfactory for the operator to make his own sample shades with the furnace he intends to use, as the degree of heat, and the peculiar manipulation each operator adopts changes materially the color. Under like conditions the results are always the same.

Gideon Sibley, of Philadelphia, exhibited their new chair. So far as may be judged by a few minutes' examination, it impressed me as being a little in advance of all others. Its many movements, all so readily made and so fully under control, was a striking feature.

H. S. Martyn, College Avenue, West Brighton, Staten Island, exhibited a machine for making seamless crowns, a plate with punches for forming from a disk of metal a seamless cartridge or blank, to be afterward shaped into a tooth crown. A plate with twenty-five holes they sell for seven dollars and a half; one with fifteen, quite sufficient for most cases, for six dollars. These prices are reasonable. In addition to this they have a set of brass teeth on which the metallic cartridges may be shaped by skillful tapping with a small hammer, and a brass plate for forming the occlusial surfaces of molars and bicuspids. These two devices I think but little of.

Dr. J. A. Steurer, of New York, had an artificial gum compound at one dollar a bottle, the color of which can be deepened. It looks very much like that previously described and is used in precisely the same way.

I have noticed above those exhibits only which have attracted attention. Others equally worthy of notice may have been overlooked. The display of soaps, tooth powders and mouth washes, dear to the hearts of the sample brigade, (which, by the way, seemed far less obtrusive than usual,) was especially full. There were a few, very few, stands of secret compounds, obtundents, etc., that seemed rather out of place. This commercial side of the meeting has its use, as the president in the opening address contends. It is really an object lesson, showing the progress the profession is making from year to year. It brings to the notice of those attending the meeting the new ideas, new instruments and improvements upon old ones, that a year's growth has produced. It enables him to contrast his own outfit with the latest and, *perhaps*, the best; so that he may see wherein his own may be improved by new purchases, or, on the other hand, it may prompt him to love it more. It is to be expected that a few objectionable features will creep in; a too rigid exclusion, indeed, would do far more harm than good.

## VIRGINIA STATE DENTAL ASSOCIATION.

The 30th annual session of this Society was held on the 25th July, 1899, at Old Point Comfort, Virginia.

Clinics were given by Dr. Clarence I. Gueves, M.D., D.D.S., of Baltimore, Md.; Dr. F. L. Wood, of Roanoke, Va.; Dr. Edward, Eggleston, Richmond, Va.: Dr. L. M. Cowardin, Richmond, Va ; Dr. F. R. Steel, Richmond, Va.; Dr. B. Bridgforth, Richmond, Va.; Dr. T. H. Parramore, Hampton, Va.

Attractive exhibits were provided by Johnson & Lund, Philadelphia; by Baltimore branch of the Consolidated Dental Manufacturing Company, and other manufacturers.

The officers of the Association are:—President, Charles L. Steel, Richmond; First Vice-President, R. H. Walker, Norfolk; Second Vice-President, W. E. Norris, Charlottesville; Third Vice-President, B. Bridgforth, Richmond; Corresponding Secretary, I. Hall Moore, Richmond; Recording Secretary, Geo. F. Reesee, Richmond; Treasurer, Wm. H. Ewald, Portsmouth.

## COLORADO STATE DENTAL ASSOCIATION.

At the thirteenth annual meeting of the Colorado State Dental Association, held June 13, 14, 15, 1899, the following officers were elected:—

President, A. C. Watson, Denver; First Vice-President, J. N. Chipley, Pueblo; Second Vice-President, Mary A. Bradner, Denver; Corresponding Secretary, Florence S. Green, Denver; Recording Secretary, L. S. Gilbert, Denver; Treasurer, William Smedley, Denver.

## BOOK NOTICES.

THE Transactions of the National Dental Association for 1898, containing the minutes of the first meeting at Old Point Comfort, Va., August 5 and 6, 1897; the Proceedings of the Second Annual Session at Omaha, Neb., commencing August 30, 1898; and the Proceedings of the First Annual Session of the Southern Dental Association as a branch of the National, held at St. Augustine, Fla., commencing February 22, 1899, forms a volume of 406 pages, about equally divided between the two organizations.

The first thirty pages are devoted to the first meeting for organization at Old Point Comfort, constitution and by-laws, list of members, etc. The next thirty-five, to business; the balance, some one hundred and thirty pages, to scientific or professional matters, reports from sections, papers, discussions, etc. I note with keen regret the remarks of Dr. Hungerford, on pages 198 and 200. It is very poor encouragement for one who may have invented or reduced to practice a new idea, after going to all the trouble of writing it up, prepare models, etc., for the sole purpose of giving to others the benefit it may be to them and to the profession at large, to be set upon, as was Dr. Jackson in this instance.

The business of the Southern Branch occupys some twenty pages, one hundred and eighty being filled by reports of sections, papers and discussions. While in the book there is much well worth reading, there is much that seems too elementary for a place in the proceedings of the two highest dental organizations in the land. The reports of sections, with but few exceptions, are by no means what they ought to be; that is, if they are intended to reflect and record a year's progress. They bear evidence of insufficient preparation. They have been hastily written, and with but little thought. We expect something more at these meetings than the usual run of matters at local dental society meetings. Much of the matter in this volume is far below the mark we have a right to expect when the great men of the profession meet in solemn conclave.—W. H. T.

## PRACTICAL PLACE.

### Pulp Devitalization in Deciduous Teeth.

One or two applications of aqua ammonia is sufficient in most cases to devitalize an exposed deciduous pulp. Apply on a pledget of cotton in the cavity.—Geo. N. Wasser, in *Ohio Dental Journal.*

### Root-canal Filling for Deciduous Teeth.

Make a paste of iodoform in glycerol, of such consistency as can be readily applied on a probe. Fill pulp chamber with temporary stopping, and cȧvity according to conditions.—Geo. N. Wasser, in *Ohio Dental Journal.*

### Pericementitis.

In all cases of acute pericementitis, I have found cataphoresis, with the use of the copper electrode, to give immediate relief, leading to a speedy cure; also in cases of chronic soreness of teeth filled to the apex. Use a point of copper similar to a root dryer. Place in pulp cavity a saline solution, insert point attached to the positive pole, using as strong a current as the patient will bear with comfort, for about five minutes. A flat piece of copper shaped like a trowel, soldered to an electrode stump, applied to cotton saturated with a salt solution laid on the gum will usually give satisfactory results.—S. T. Kirk, in *Indiana Dental Journal.*

### Action of Arsenic on Soft Tissues—Antidote.

In the tincture of iodine we have an antidote of which the action is so certain and prompt in arresting inflammation and ulceration, caused by the accidental contact of arsenic trioxid with the gums and cheek, that I regard it almost as a specific. If those who use arsenic estimate at their full value the terrible ravages that may be caused by it, and know how easily they may be arrested, it is inexcusable if not criminal, to permit a case to go on to necrosis of the bony structure.—*Dental Brief.*

### SULPHURIC ACID IN MIXING AMALGAM.

While attending the Blue Grass Dental Association, I saw a demonstration of the use of sulphuric acid in mixing amalgam. I have tried it a number of times and have secured good results. Take a five per cent. solution of the acid and pour on the amalgam for the filling; wash it thoroughly, then add the mercury, of which I think it requires less, wash it well and squeeze out the excess of mercury. The results will be pleasing.—H. A. SMITH, in *Dental Weekly.*

### CEMENTING BANDS AND CROWNS.

Dry the tooth and paint with shellac varnish before applying the cement. This gives durable adhesion, and should the cement dissolve, the shellac will protect the tooth and prevent decay under the band.—W. G. LANGE, in *Dental Cosmos.*

### REMOVING DEPOSITS AND STAINS.

My plan is to take a pledget of absorbent cotton, saturate it with alcohol and go over the teeth, cutting all fats and removing starchy foods. Then with a little cotton saturate with a 3 per cent. solution of pyrozone; then with rubber cups or moosehide discs, or whatever I may want to use, dipped into pyrozone and pumice. After removing all traces of lime deposits, I polish off stains; if there are any that do not yield readily to this treatment, I touch such stains with compound tincture of iodine, and endeavor to polish off as before; if this does not remove them, I touch stains with 10 per cent. solution of trichloracetic acid, this usually removes all traces of stain; I then finish with chalk and pyrozone.—S. D. POTTERF, in *Ohio Dental Journal.*

### COMBINATION FILLING, OXIPHOSPHATE AND GUTTA-PERCHA.

In bicuspids, and sometimes in molars, where the cavities extend well below the gum line, particularly on the approximate surfaces, in teeth of soft and chalk-like structure, coat the floor of the cavity with chloro-balsam and fill with gutta-percha to about one-sixteenth inch above the gum line; the rest of the filling to be made of cement. This filling has the advantage of cement in strength for contour, adhesion for anchorage, without the disadvantage of washing out at margin the defective point of all cement fillings.—F. T. VAN WOERT.

### TREATING SLIGHT WOUNDS.

As a covering and protection for slight wounds on the hands, it has been recommended that an application of collodion and Peru balsam (1:10) gives excellent results. This will remain intact and be perfect for days; and washing the hands with soap and water does not disturb it in the least. It is easily prepared and yields satisfactory results.—*Digest.*

### TO SOFTEN HARD PLASTER.

It is said that vinegar will soften plaster. It is used in removing plaster bandages. Bichloride of mercury solution is also said to be good for the same purpose.—*Dental Weekly.*

### MOUNTING CARBORUNDUM.

If the wheel is warmed and the hole filled with melted sulphur, it may be permanently mounted on a chuck, truing it by revolving it in a lathe or the engine, and when true, dipping it into cold water.—*Practitioner.*

### A PROCESS FOR NICKEL PLATING.

The following process for nickel plating is given in the *American Druggist:* Boil in a copper vessel a saturated solution of zinc chloride and an equal quantity of water. While boiling, add hydrochloric acid, drop by drop, until the precipitate at first thrown down is redissolved. Now add zinc to powder, until the bottom of the kettle is nearly covered with a precipitate of zinc. The bath is now ready for the addition of a salt of nickel, and you may use either the sulphate or the nitrate. Add it in sufficient quantity to give the bath a strong green color. The articles to be nickelled are now hung in the bath by means of a zinc wire, or a strip of sheet zinc, and a few pieces of the latter are thrown in along with them. Raise the heat to a strong boil and continue it for several minutes, or until the articles are covered with a bright coating of nickel. The articles should be thoroughly cleaned and free from grease before being put in the bath.

## BORAX SOLUTION FOR SOLDERING.

Dr. J. T. Usher gives his method of making a solution in the *Dental Cosmos.* He says, "In soldering gold crowns I use a saturated aqueous solution of borax, made by filling a bottle with water and dropping into it a lump of borax. This is allowed to boil on top of my vulcanizer or elsewhere, and the water will take up a certain amount of the borax, leaving the residue undissolved. An ounce of this solution will last a busy man about a year. In using it, the piece to be soldered is simply moistened where the solder is wanted to flow, and the solder will run like a flash, much easier than when the borax powder is used."

## REMOVING TEETH FROM DENTURE.

When removing teeth from an old vulcanite case, put a little wax on when heating in the gas. This will soften the vulcanite and render removal of the teeth easy. Another method is to boil the plate in water until soft; this will do away with the unpleasant smells with which we are all familiar.—F. MACKENZIE, in *Brit. Jour. Den. Sci.*

## TREATMENT OF SLOUGHING GUMS DUE TO FORMALDEHYDE.

Should you be so unfortunate as to get formaldehyde on the gums, and the patient returns with a slough, first cleanse with 3-per cent, pyrozone, remove any pain by local application of campho-phenique, dry surface of slough and coat several times with the compound tincture of benzoin, leaving just sufficient to rotate the broach between the fingers. Handles are necessary when using canal cleaners with sulphuric acid, as this operation does not require that the broach should be rotated, but simply passed in and drawn out repeatedly. The handles that come with the Donaldson cleaner are admirably suited for the purpose. To remove a cleaner or broach from one of the handles, heat the broach slightly in a small flame; at the same time pull on the broach with pliers. To replace a broach in a handle, heat it in a small flame, holding with the pliers; touch the heated shank end to a small piece of shellac, slightly melt the shellac and press into the handle, cool with a drop of water from the finger.—*Amer. Dental Weekly.*

THE

Dental Office and Laboratory.

FOURTH SERIES.

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# RULES FOR CROWN AND BRIDGE WORK.

BY THEODORE F. CHUPEIN, D.D.S., Philadelphia, Pa.

1

Always use *straight pin teeth* for making crowns, or for dummies when possible. Teeth with the pins inserted in this way are stronger than when inserted crosswise. Even if a part of the lower pin be ground away, in adjusting it to the face plate, a straight pin tooth will be found to be stronger.

2

If a tooth be too wide to enter a space, it will be preferable to get one of the proper width; but if it must be ground on the side, it is better to grind from the *distal* surface of the tooth than the mesial, as the mutilation of the tooth by grinding will be less apparent when the grinding is dóne on the *distal* edge than the mesial.

3

In making crowns on dummies, it is better to *back the tooth first*, before any grinding is done, for the tooth is stronger then, and the pins may be well rivited to the backing. If the backing is put on after the tooth has been ground, and the pins have been encroached on by the grinding wheel, a part of the tooth may be fractured when riviting the backing. This would not be the case if the backing is put on first.

4

It is best to grind the tooth *full short* to accommodate it to the antagonism, because, whether the crown be secured to the root with cement or gutta percha, either of these materials will cause a slight protusion, and hence will cause the antagonizing tooth to strike the tooth of replacement, necessitating the grinding of the porcelain facing on its cutting edge, which always mutilates it and gives it an unnatural appearance.

5

Always insert a crown with *gutta percha* when possible, in preference to cement, because if the porcelain facing break, the pivot or dowel may be readily removed from the root by the application of heat to the remains; whereas this would be impossible if cement had been used. When such a disaster occurs the whole of the remains of the crown would have to be ground away and the dowel drilled out. A long, slow, disagreeable and tedious process to both patient and operator. If it be found that cement *has* to be used to secure the crown to the root, it is best to cover the dowel with several coats of cloro-percha before applying the cement. By this manner, should the porcelain facing break, the dowel may be removed by the application of heat, though not so readily as when entirely set with gutta percha.

6

In the construction of bridge work, dummies (in many cases) are much stronger when tipped with gold, than when left untipped. The tipping acts as a kind of cushion to mollify the force of mastication. This is more particularly the case with bicuspids and molars than with the front teeth.

7

In assembling the parts of bridge work, the crowns should be fitted on the buttress teeth, and the dummies gummed in position between with hard wax. Before the hard wax gets brittle, the teeth should be antagonized, and the masticating surfaces of the dummies should not be permitted to touch the antagonizing teeth hard. At least the space of *three thickness of writing paper* should be left between these occluding teeth. If attention be not given to this, the operator may look out for the fracture of the porcelain facing, even though the veneers may have been tipped. When the parts are thus assembled, and the hard wax made brittle by iced water, the buttress crowns, as well as the dummies, may sometimes be removed from the mouth and, when removed, invested for soldering. In this way much of the trouble is saved, but if the assembled parts do not yield readily it is best then to take an impression with plaster, which will bring away all the parts in the impression. When running the model to this impression, mix fine sea sand with the plaster, and before pouring this, put a piece of iron wire in each of the gold crowns of the buttress teeth, so as to strengthen these, otherwise they might be broken off from the sand and plaster model. When this model gets hard, it is removed from the impression by cutting this carefully away piecemeal. The model is then cut down to its smallest proportions, when it is permitted to soak in water. More sand and plaster are then mixed with water, when the prepared model, with the assembled parts of the bridge, are invested ready for soldering. When the investment has hardened, it is trimmed so that the flame of the gas blow-pipe may readily reach all the parts; then all the hard wax is scraped away and the parts left perfectly clean. If any wide spaces between the dummies or the crowns exist, these spaces should be filled with small pieces of 18 karat wire, as the solder will not bridge a wide space, besides, if the workman *force the solder to bridge* the space, the case would not be as strong if filled with solder as if filled with small pieces of wire; then again, when the solder cools and contracts, it is apt to draw the dummy out of the position which it held when it was assembled in the mouth with hard wax. Before soldering, the invested bridge should be permitted to heat up slowly on a Bunsen burner, and not removed to the soldering block for soldering until the investment is a glowing red heat.

8

If it be not convenient to assemble the parts *in the mouth* as we have advised (but it is always best to do so), the crowns should be fitted to the buttress teeth, then the bite taken *with a small piece of wax* placed between the crowns. Be careful to use only *a small piece of wax*, as you can then see what you are doing and if the occlusion be correct, which you could not do if a large piece of wax had been used. When the bite is taken, a plaster impression follows. This brings away the two buttress crowns with it. After this impression is secured, a wax impression may be taken of the opposing teeth. The plaster impression is now filled with sand and plaster, placing a piece of iron wire into each gold buttress crown, so as to strengthen the model. The wax impression of the opposing teeth is run with plaster only. When the plaster and sand model has hardened, the impression is cut away, and the model secured in an articulator. The model from the wax impression is then removed by softening the wax in warm water. The bite is now applied between the gold crowns to the sand and plaster model in the articulator, and the model from the wax impression is placed in the imprints left in the bite wax by the occluding teeth. This model is then united to the other part of the articulator by the addition of more plaster. These manipulations give the workman the case as nearly as it is possible to obtain it, as it was in the mouth of the patient. In assembling the dummies on the plaster and sand model, the model may be slightly scraped, so that the dummies may slightly impinge into the soft gum tissue, which will have the appearance as if these teeth were growing out of the gum. When the dummies are assembled on this plaster and sand model, between the two gold crowns, they may be united to these with hard wax. It will not matter if the hard wax smear over the plaster and sand model, because as all will be invested together this smearing is unimportant. When properly assembled, the plaster and sand model, with its adhering crowns and dummies, is cut away from the articulator, and reduced as small as possible. It is then soaked in water, and while soaking more sand and plaster are mixed with water, and the model and prepared bridge are invested in it. When the investment has hardened, it is trimmed in the manner before indicated, the hard wax all scraped away, all the parts cleaned, and the case placed on the Bunsen burner to heat up, when it is soldered as before advised.

9

In taking the impressions with the buttress crowns in place, it is always best that these crowns *come away in the impression.* This will indicate that the delivery is easy, so that when the case is finished it will go into place with facility. If the crowns do not come away in the impression, it indicates either that the crowns fit the buttress teeth very tight, or that there is an inclination of the tooth, such as to offer an impediment in the withdrawal. This should be looked into *at once,* as it will be easier to rectify at this stage than when the case is finished. If this be not seen to there will be difficulty in placing the bridge in position when finished. Bridge work *must* be done with great exactness, otherwise it will be disappointing.

10

When a tooth is to be used as a buttress on which a gold crown is to be fitted, the distal and mesial surfaces, as well as the swells noticed on the palatal and labial aspects of upper bicuspids and molars, should be ground so as to render all these parts *parallel.* This form may be determined by taking a wax or modelling compound impression of the prepared tooth. If, on withdrawing the impression, it yields readily, and on examination gives no evidence *of a drag* or imperfection at the gum margin, it may be assumed that the tooth has been properly prepared. If the impression show any drag, indicating that the tooth is not parallel, it should be still further ground, until a fair, sharp, clean impression results. We have found it beneficial, before reducing these teeth for buttresses, to wrap a piece of thread or ligature silk several times around the tooth at its neck, and let it go for twenty-four hours. This manipulation will cause an absorption of the gum at its neck, where a sudden dip is frequently observed, and will be a valuable guide in grinding the tooth to a proper shape for the crown which is to be fitted to it. It must be also remembered that these buttress teeth are entirely covered with gold, hence it must not be forgotten that the occluding surface of the tooth is also to be reduced, in order that the intervening thickness of the gold crown is compensated. To be certain that the occluding tooth does not strike its antagonist, we have resorted to the following expedient: A piece of card board, a little thicker than the gold used for the crown, is cut about a quarter of an inch wide, and the length of the card from which it is cut. One end is placed between the occluding teeth, the other end held by the fingers. When the patient closes the teeth, if on pulling the strip of card board can be easily removed, it shows that the occluding teeth do not strike each other. The card board should be inserted between the occluding teeth at various angles, so as to be certain that it has been reduced at all points. If on pulling at the strip of card board it is held firmly by the antagonizing teeth, this shows that the grinding has to be continued until the strip of card board is easily removed from the opposing teeth. It has been suggested that this may be done with articulating paper, which leaves a black mark on the opposing tooth at the point where the teeth touch. It may be done by either plan. The card board plan is more cleanly than the other.

11

When impressions of the teeth which are to be used as buttresses for the bridge are taken, it is best to run these impressions with fusible alloy. But before fitting a gold buttress crown to such a die, it is well to cut the die all around at its neck with a graver, so that the gold crown will go slightly below the gum at its free margin so as to prevent the ingress of food at these points.

12

In all work that is to be soldered, whether plate work, crown work, bridge work, or regulating appliances, it is of the utmost importance that *close and accurate fitting* of the parts, which are to be united with the solder, be made. To attempt to make the solder *bridge a space* only results in vexatious attempts, while such an attempt may result in drawing the parts away from each other, and changing the position they should occupy when the solder cools. *Close fitting and little solder* is a good rule.

13

In adding a solid gold tip (made by stamping up a piece of 22 karat gold on the die plate, and filling the inside with gold of a lower (18) karat, to a porcelain veneer, to be used as a dummy in bridge work, it is best to solder the solid tip to the backing of the veneer, before the veneer is adjusted by grinding to the articulation. If the grinding of the veneer be done *first*, it may be ground *too short* to make the proper articulation with the opposing tooth, but if it be done *after* the solid tip is added to the veneer, *the proper adjustment* can be readily made with the occluding teeth.

14

Be careful in assembling tipped or untipped dummies, to see that they do not touch each other by a space equal to the thickness of writing paper, otherwise you may look out for a cracking of the porcelain teeth or veneers. These cracks may not show at the time of insertion, but are there nevertheless, and we will be much chagrined a short time after insertion to have the patient return with a dummy or two broken off, necessitating the removal of the bridge for repairs, and the consequent mutilation of the work. This rule applies as well to plate work as to bridge work.

### THIRTY-EIGHTH PAPER.

## LEADING QUESTIONS AND ANSWERS FOR DENTAL STUDENTS.

By Theodore F. Chupein, D.D.S., Philadelphia, Pa.

### Diseases of the Peridental Membrane, Continued.

Q. What is the most common form of disease of the peridental membrane?

A. Alveolar abscess.

Q. Where does this disease always have its location?

A. Always in the apical space, although the abscess may be found on a different part of the root.

Q. Why is it called alveolar abscess?

A. Because the abscess is found in the alveolus or socket of the tooth.

Q. Is an alveolar abscess always the result of the death of the pulp of a tooth?

A. No. An alveolar abscess may result from an injury, without exposure of the pulp or without the death of the pulp.

Q. Is there any designation to such an abscess?

A. Such an abscess is termed "a traumatic alveolar abscess."

Q. Why this designation?

A. Because such an abscess is caused by a blow, an injury, a fall, an accident or a wound.

Q. What is the meaning of "Traumatic"?

A. Caused by a wound.

Q. Are traumatic alveolar abscesses found in the apical space?

A. No; generally on the side of the root.

Q. When an alveolar abscess is alluded to what is inferred?

A. That the abscess finds its location in the apical space, and is the result of inflammation of the peridental membrane, induced by the death of the pulp.

Q. What are the symptoms of alveolar abscess?

A. First a distress about the tooth, increasing in intensity to the most intolerable torture. If the inflammation cannot be subdued, and pus begins to form, the gums present a deep congested condition, with puffy swelling. Chills and fever may accompany it, and the pulse rise to a high degree.

Q. Can you give the procedure of an alveolar abscess?

A. The pus formed fills the apical space, where it meets the bony walls of the socket. The continued formation of this pus keeps up a constant pressure in its effort to find a vent. The action of the pus produces an absorption of the bone. As the pus thus burrows its way to find an outlet, it chooses a direction which offers the least resistance. Thus the bone is softened, because the bone here, being of cancellated tissue, is acted on more rapidly, and a considerable cavity is often made before the harder, external lamina is reached. The cavity thus formed holds considerable pus. While doing this the tissues of the peridental membrane may not be destroyed. This is often seen when a tooth is extracted with the pus sack adhering to the end of the root. This pus sack finds partial room for itself in the cavity formed in the cancellated tissue of the bone, and accounts for the feeling of "protrusion" or "longness" of which patients complain when the teeth are brought together. When the pus has made its way through the external lamina of the bone, then the pus escapes. When the abscess takes this course the end of the root is not affected.

Q. Is this always the case?

A. No. Sometimes the end of the root becomes denuded.

Q. Is this a more or less favorable condition?

A. A less favorable condition, and complicates the cure.

Q. Is the denuding of the end of the root a frequent occurance?

A. It does not usually occur at the time of the formation of the abscess, but is more likely to occur when the disease assumes a chronic form.

Q. What is the character of the pain while the abscess is forming?

A. The pain is of a severe throbbing character, and while the pus is burrowing its way in its effort to seek an outlet, the pain is of a most severe, unendurable nature. At this stage, too, we notice the gums over the affected tooth to be highly conjested and swollen, with the engorgement of blood. Though the gums may be swollen at this stage, the tissues of the face, as the lips, the cheek or the neck, do not partake of the inflammation. It is generally the case that these parts swell after the pus has made an outlet, hence it is usually reported that when the swelling begins the pain, in a great measure, ends. The burrowing of the pus usually points to the buccal aspect, yet we notice that it will sometimes find an outlet remote from the point of departure, as for instance on the muscles of the neck, or the cheek, in the roof of the mouth, in the ear, or in the nostril.

Q. When the pus is discharged what occurs?

A. The extreme swelling of the parts usually subsides more or less rapidly. The mouth, which could scarcely be opened, relaxes. The eyes, which were nearly closed from the inflammation of the parts, resume their condition. The intolerable pain in the location of the affected tooth subsides after a few hours, and the swollen parts assume their normal condition after a day or two. The still pent up pus continues to discharge through the abscess, which the patient may increase by passing the finger over the gum with slight pressure.

Q. If we leave an abscess thus, what is the result?

A. It assumes a chronic condition, the pus discharging through the outlet, but in greatly reduced quantity. The parts resume their normal condition apparently, with the exception of the disgusting flow of pus into the buccal cavity.

Q. Is the alveolar abscess, such as you have described, the only form of this disease?

A. No; it has several forms. It may burrow through the bone as we have described; the pus may separate the periosteum from the bone and make a cavity for itself, or it may run along the peridental membrane of the root and find an exit at the gum margin.

Q. Which of these acute forms of abscess is considered the most dangerous?

A. The form which burrows its way *between the periosteum and the bone*, and forms a cavity for itself. For as the pus is thus held constantly next the osseous structure, it may result in necrosis of the bone.

Q. How may we designate this condition?

A. Generally when the inflammation has run an extensive course, when the tumor is large and soft, indicating a softening of the young cells or osteoblasts, from the underlying bone. When the pus has made its escape, instead of forcing its way through the tissues, it raises the periosteum from the bone, somewhat after the manner of a felon, thus forming for itself an extensive cavity, and if the pus is permitted to lie in contact with the bone, necrosis of greater or lesser extent will result. If the volume of pus is, however, relieved from this cul de-sac, the periosteum is again brought in contact with the parts from which it was forced, and necrosis will be averted. The discharge of the pus may be effected with a lancet, when by passing a probe through the orifice it will be found that the bone has been stripped of its periosteum to a greater or lesser extent.

Q. What do we notice if this form of abscess is left to itself?

A. That the exudation of pus occurs at the gum margin, and the outer plate of the bone being destroyed leaves the tooth or teeth involved by this destruction of their sockets in an unsupported condition, and hence quite loose. The blood supply is cut off from the outside, and the peridental membrane of the tooth or teeth receive a very weak supply by anastomosis from the inside. Such a condition is almost certain to result in necrosis. When an abscess of this nature occurs in the lower jaw, if it be not opened and discharged in the mouth, it will seek an outlet on or under the chin, running along the soft tissues and forming a scar, which will not heal unless the tooth be successfully treated or extracted. This is a grave matter, for even should the tooth be successfully treated the remaining scar puckers the skin and leaves the part unsightly. To a man with beard this is not so apparent, but to a woman it is a serious blemish, so that when such a thing is apprehended no time should be lost in opening the abscess within the mouth to prevent such a sequence.

Q. Do these abscesses always perforate the external plate of bone?

A. They most frequently do so, yet they often make their way towards the palate, forcing the periosteum away in this locality, and forming quite a tumor here before the pus makes a vent through the gum tissue.

Q. What is indicated in such cases?

A. Necrosis, or a liability to necrosis, so that these tumors should be opened for the discharge of the pus without delay.

Q. Do these abscesses ever assume a chronic form?

A. They sometimes do, and take this condition after the subsidence of the acute form. The irritation by which this chronic condition is kept up is generally derived from the pulp chamber. The same causes which brought about the acute form are responsible for the chronic form, namely, the discharge of septic matter from the diseased pulp into the apical space. When the pus is discharged, the parts resume, after a time, their normal condition, only leaving the mark of the fistula on the gum. This, after a time, lessens in size and appears entirely cured, giving the patient no uneasiness. There is, however, always a slight discharge of pus. This flow is more profuse after its first subsidence, but always continues. At other times these chronic abscesses remain entirely quiescent, a thin peddicle seems to form over the fistula, which fills with pus. This peddicle may be ruptured either by pressure with the finger or by probing with a tooth-pick, when it continues in the same condition until another forms.

Q. Do these fistulas ever close of their own accord?

A. Sometimes, though rarely, in which case we have what is known as blind abscess. In such cases the exudation of pus seems to find an outlet from the apical space along the sides of the root until it is discharged at the gingival margin. When this condition exists the tooth is liable to be sore, but the discomfort never results to actual suffering. Sometimes these chronic abscesses result disasterously. The peridental membrane being sometimes destroyed, the root is left bare and serumal calculus collects thereon, which forms in little balls or points, and the case remains incurable until these are removed, which is often quite difficult from their tenacity and density, as well as the soreness which they cause and the irritation they keep up.

[To be Continued.]

## BOOK NOTICES.

THE HYGIENE OF THE MOUTH; a guide to the prevention and control of Dental Diseases. By R. Denison Pedley, F.R.C.S., Ed., L.D.S., England, Dental Surgeon to the Evelina Hospital for sick children, Southwark, London, with numerous illustrations. Published in London by I. P. Legg & Co., 289 and 291 Regent Street, W. In America, by the S. S. White Dental Mfg. Co., Chestnut Street, Philadelphia, Pa., U. S. A.

This book seems to be one more a popular treatise than one for professional instruction.

Why men, women and children should have to pay such attention to cleaning their teeth—when no other animal does it—only goes to prove the effect of civilization and the violations against natural laws which they constantly commit.

Man has been rebellious from the beginning, and the cause of disobedience has been gradually visited upon him by sickness and disease more and more as he has advanced in civilization.

We agree with the author in his denunciation of the vile practice of inserting artificial teeth over decayed and abscessed roots.

We hold to the teaching, somewhat against his, that nothing promotes to the general health, as well as to the teeth, as life in the open air.

We do not believe either that sugar or sugar candy hurts the teeth of children, as it is so often made to appear, only that in large quantities of this, or carbonaceous foods generally, it reacts on the teeth through the stomach.

Hot food, and food lacking in nitrogenous and mineral elements, badly chewed and bolted in large pieces, inappropriately mixed with saliva, do more injury to the general health, as well as to the teeth.

The instincts of all animals direct them to the selection of the best foods, which are always cold, and which they chew to the minutest proportions. It has been proved that if man makes the selection of food, and gives this hot or cold, evil results ensue to the animals and cause their teeth to decay.

When animals are fed on the swill of distilleries their teeth loosen and decay, and when this is given *hot* decay is more pronounced, hence this proves that hot food is more pernicious than cold.

The book is well printed, the type large, and the general get up (with the exception of the cuts) all that is desirable.—Ed.

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An Epitome of the History of Medicine. By Boswell Park, A.M., M.D., Professor of Surgery in the Medical Department of the University of Buffalo, etc. Based upon a course of lectures delivered in the University of Buffalo. Second edition. Illustrated with Portraits and other Engravings. 6½ x 9½ inches. Pages xiv–370. Extra cloth, $2.00 net. The F. A. Davis Company, Publishers, 1914–16 Cherry Street, Philadelphia.

In this work, medicine, as found among the ancients, is taken as a starting point, and the science is traced down through the Ages of

Foundation, Transition and Renovation, to the present time. Each age is divided into periods, the prominent figures of which, in medical thought and progress, are described. Of necessity, the " relationship between medicine, philosophy, natural science, theology and belles-lettres " has required description in completing the picture. Special chapters are devoted to Anesthesia, Antisepsis, the History of Dentistry, and Iatrotheurgic Symbolism. To the library of every student of medicine and dentistry this volume should be a welcome addition, for its descriptions of noted men whose names have been affixed to an operation, disease, or anatomical structure, not only clothes these names with a personality that is instructive, but also serves as an aid to memory and incentive to furtherance of knowledge. It is well, too, that we should all know, for our better appreciation, the difficulties, trials and personal dangers that the early pioneers in medicine had to contend with. Though the environment, social, religious, and medical, has changed since the time of DeChauliac, 1383, his description of what a physician should be is well worthy of repetition. He recommends that he be " learned, expert, ingenious, bold where he is sure, timid when in doubt, avoiding bad cures and practices, being gracious to the sick, generous and compassionate, wise in prediction, chaste, sober, pitiful and merciful, not covetous nor extortionate, but receiving moderate fees, according to the circumstances of his patients, the character of the case, and his own dignity." The book is finely illustrated with portraits of famous practitioners, and the earlier forms of surgical instruments and operations.

## SELECTED ARTICLES.

### ACID TANNING.

By Dr. F. S. Brooks, Martinez, Cal.

About seven months ago, I commenced experimenting with a combination of chromic and sulphuric acids in the mummification of pulps, where portions remain in inaccessible root canals, and although the time may be too short yet to say what the permanent results will be, I have demonstrated one thing at least, and that is, that as a mummifying agent, this combination is unequaled.

My first experiments were upon pieces of raw beef; I took some pieces of meat one-half inch or more in thickness, and placed on them a few crystals of chromic acid, then a drop or two of dilute sulphuric acid (fifty per cent.) and left them over night. The next morning they were found to be perfectly tanned, being very hard and tough, of a yellowish color, and impervious to water; after several hours' immersion they were found to be perfectly dry.

A similar method is employed in some tanneries, I understand, where rapidity is the desideratum.

The next experiment was upon the pulp of a lower sixth year molar, the root portions of which I found it impossible to devitalize or remove. A few crystals of chromic acid were placed in the pulp chamber, then a drop of fifty per cent. solution sulphuric acid added, which was worked into the root canals as far as the patient could endure. This was followed by a paste of iodoform and oil of cassia, and the tooth filled permanently. This was over seven months ago, and so far has given no trouble, except for an hour or so after the operation there was some pain. This I find is the case in nearly all the teeth which I have treated in this way, but is usually not severe, and lasts but an hour or so, and is caused, I presume, by the chromic acid (which has a remarkable tendency to spread) passing through the apical foramen.

I have treated quite a number of teeth in this way since, and have yet to record a failure. Recently, instead of using the chromic acid in crystal form, I have prepared a solution of equal parts chromic and fifty per cent. sulphuric acids, which is kept ready for use in a glass-stoppered bottle.

A convenient way of applying is to take a glass tube such as is used for a drinking tube, and by heating in the flame of a Bunsen burner, draw out to a fine point. This can be dipped into the acid, and will take up a small quantity, which can be applied to the entrances of the canals. It is not necessary to flood the pulp chamber, a very small quantity being sufficient. It is well to have two or three of these tubes bent at right angles for convenience.

Great care should be exercised to avoid touching the soft tissues, as its effects are anything but pleasant; it can be neutralized, however, by a solution of bi-carbonate of soda, which should be kept ready in case of accident.

This method, it seems to me, has advantages over any other yet offered for the mummification of pulps, as by no other method can it be accomplished so completely in so short a time, and I would respectfully commend it to the attention of the profession.—*Items of Interest.*

## CALOMEL AS A CURATIVE AGENT IN DIPHTHERIA.

Dr. Leonardo D. Judd, of Philadelphia, in the November, 1897, number of the *Annals of Hygiene and of Medicine*, recommends heroic doses of calomel in treating this disease. To an infant of eighteen months, with malignant diphtheria which had steadily progressed towards a fatal issue in the face of the usual treatment as generally taught and employed, until she was nearly in a moribund condition, he gave ten drops of calomel in water at the first dose, and followed this with five grains every hour until a full, free, characteristic dejection occurred. It took eighty grains to reach such an effect; the child commenced to improve from the fourth dose, and made a splendid recovery; not the slightest ill effect followed. In another case, an adult, he began with a scruple at the first dose, and ten grains every hour thereafter for thirty-five hours, when a copious dejection occurred; smaller ones had preceded, but not until three-hundred and sixty-five grains had been given did he get the characteristic action. He uses it also in some cases, in solution, to syringe the nostrils, etc. He regards it as having diagnostic value, having found that where this disease exists the usual action of calomel is resisted until the disease itself is overcome, and says, "Believing, as I do, that all sore throats, where the tonsils are involved and where false membrane exists, are in some degree related to diphtheria, I never hesitate to exhibit calomel in small doses at first, and by its action prove or disprove the diphtheritic tendency of the case. If the tenth of a grain given every hour, dry, upon the tongue, fails to act upon the bowels in any reasonable time,—say, in from eight to twelve hours,—I assume that there is more than an ordinary condition existing, and strengthen the dose or shorten the time between the time accordingly." He further says, "In true diphtheria calomel is slow to act upon the bowels, and herein lies its diagnostic value, if in doubt. The more severe the type the greater the quantity to be given. I have spoken of the *characteristic dejection* to be secured, especially in the malignant type, before we should let up in the administration of the drug. It should be a green, copious, frothy discharge, resembling 'frog spittle,' such as may be seen in an old water-trough. There is no danger of ptyalism. So long as it has the bacilli to antagonize, that alone seems to demand all its energy; and when it has conquered, it leaves in the characteristic evacuation described, and the patient is *absolutely free from any mal-effect.* I have never yet seen a case of diphtheria salivated by calomel in large or small doses, nor have I seen it create hypercatharsis in any case of diphtheria."—*International.*

## DR. HART'S IDEAS OF THE EVOLUTION OF CARIES AND ITS PREVENTION.

From a paper read before the California State Dental Society, and published in the *Medico Dental Gazette*, we make the following digest:

Dr. Hart says, I believe decay to be a natural force which acts through media upon all material bodies, with the effect of changing their identity. I do not consider it a process of a force, nor as the result of the action of a form of energy, but as a force or form of energy that is known only to us by its manifestations through matter—effecting changes from a state of soundness or perfection to one less sound or perfect.

Science has already proven that upon water for many of their combinations depend the animal, the vegetable and even the mineral kingdoms. The cell holds imprisoned within its walls water of combination. The crystal holds within its angles water of crystallization.

Bacteria will not grow on tissues that have been treated with solutions of certain strength of bichlorid of mercury, nitrate of silver, chlorid of gold, sulphate of copper, chlorid of tin, formaldehyd, the essential oils, and many of the alcohols, acids and alkalies.

How these chemicals act so as to prevent the growth of bacteria is due to their ability to harden albumen and render it insoluble to the action of bacteria; that they are powerful in preventing decay just in proportion to their ability to form insoluble albuminates with the various tissues of the body. In many instances when applied to tissues they cause a shrinkage or expansion quite beyond recognition. That the changed appearance noted in the tissue is due, in part at least, to the altered condition of the water in the tissues.

Bacteria, I believe, enter the body in a manner similar to that of the roots entering the ground of higher forms of the vegetable kingdom. They must gain lodgment, and then just as the roots with their digestive fluids dissolve the soil and even penetrate rocks, so bacteria penetrate the tissues, unless the cells are too insoluble, or contain substances having a greater affinity for the water necessary for the growth of bacteria.

Hence the importance of rendering the water in the tissues inaccessible to bacteria, and that the way the cells render themselves germicidal is by removing the water from the bacteria themselves, or else so placing the water of the tissues as to be insoluble to the digestive action of bacteria. Drying removes the water of combination in part, so although the tissues may be covered with bacteria, the bacteria do not grow; not because the bacteria are dead, but because they cannot get the water necessary for their growth. The proof that it is only water that is needed anyone knows who has had experience with dried foods that have become damp.

I believe if it is through a change in the main compound of the body that it becomes possible for disease to manifest itself, whether it be an atrophy or hypertrophy of the tissues, resultant from the action of bacteria, chemical or natural forces, the more stable we can fix, seal or combine the water in the tissue, the more effective will be its power of resisting decay.

From my experiments with the teeth I believe it is possible to fix, seal or combine the water in the teeth so as to be inaccessible for a time to bacteria.

Carrying into actual practice the application of the principle, viz., protecting the water in enamel and dentine by causing the tooth, and the bacteria as far as they have penetrated the tooth, to take up certain substances dissolved in water, like formaldehyd, nitrate of silver, chlorid of gold, sulphate of copper, chlorid of zinc, chlorid of tin, and a whole host of substances of a like nature that I believe have the power of protecting the water in the tissues from the growth of bacteria, I have been able for the past three years, and so have many of you, to stop decay for a few months where the teeth were literally melting away before the action of bacteria.

Formalin or formaldehyd is an agent with great power in the prevention of decay due to bacterial action. After a year's experience I can report nothing but success. I have found it a boon to these desperate cases of recurring decay, where the teeth seem to be literally melting away before the digestive action of bacteria.

For the past year I have used formaldehyd about as follows: After cleansing the surface to be hardened with pyrozon (three per cent. medicinal) I make several applications of the formaldehyd, varying in strength from two to forty per cent., forty per cent. being full strength, as it comes to us from the shops, to the cavity, carious surface, and healthy portion of the tooth and teeth under the rubber-dam, from ten to forty minutes. The cavity is then dried out and coated with a saturated solution of paraform in chloroform, to which has been added sufficient hard Canada balsam to make the solution a thin varnish. Into this, after waiting for the varnish to nearly dry, may be burnished amalgam, stuck gold, gutta-percha or cement.

Formaldehyd should never be applied to the surfaces of the teeth except the rubber-dam be in position, fitted evenly around the necks of the teeth, so that there shall be no holes whereby the mucous surfaces of the mouth may become exposed to the action of formaldehyd, as it produces an ugly slough.

In the application of the formaldehyd it is important to have the surfaces of the teeth free from all adhering colonies of bacteria, so as to be sure and kill all bacteria that have penetrated the enamel or dentine. I generally include under the dam five or more teeth, so that I can treat their surfaces to a bath of formaldehyd, thus arresting and preventing the occurrence of decay. I repeat this operation until all the teeth have been so treated. If it is a very bad case have the patient return every three months for treatment.

## SPLINT FOR LOOSE TEETH.

The method is as follows: Ligate the teeth if they are very loose; polish the grinding or cutting surfaces with stones or disks, make a groove 1-32 of an inch thick from one approximal surface to the other in small teeth, such as lower centrals. Cut out a pit 1-20 of an inch deep near approximal edge to avoid the pulp. In large teeth two pits may be necessary.

In the groove a thin piece of sheet platinum 38 or 40 gauge is to be burnished. When this is fitted properly, punch a hole through the platinum immediately over the pits; fit irido-platinum wire (20 gauge) into the pits, through the holes in the platinum, and solder in place.

When all the loose teeth are thus prepared, and the little concave platinum pieces with the pins are properly in place, take an impression in plaster, and if the platinum pieces were not removed in the impression, put them in their places upon it; varnish impression and pour in plaster and pumice stone. When the case is separated it will be found that all the little platinum pieces are in their respective positions on the teeth; they are now soldered together and made as thick as required. When this has been done, file, polish and cement in place with thick cement —F. L. FOSHEIM, in *Items of Interest.*

## A MODE OF DEVITALIZING TEETH.

Dr. F. C. Pague gives his method in the *Med.-Dental Gazette*, as follows:

The method is particularly applicable to posterior teeth in particular, where we find it necessary, by means that to me have proven more satisfactory, than anything I have been able to get hold of. I prefer it because there is little or no pain in its use, that is, the aching and soreness that we usually have from placing the devitalizing fibre. I prefer it again because it can be retained for an indefinite time without any danger of future trouble. The preparation that I use is very simple, consisting of minute particles of crystals of arsenic and about double that quantity of alum; into these particles I drop a drop of campho-phenique and take the mass up on a small pledget of devitalizing fibre. You could use cotton just as well as the devitalizing fibre, but I prefer the devitalizing fibre because in it we have morphine, which, of course, will assist in keeping the tooth quiet. I have experienced some soreness in the teeth after the second or third day, but not sufficient to inconvenience the patient to any considerable extent. The soreness the patients complain of is to the extent that they prefer to favor the tooth—they don't want to bite on it—but not to the extent of aching. To overcome that I have been using recently iodoform; where I have used idoform I find that there is no soreness whatever. This application I have been using for some three years. In my hands it has proven more satisfactory than anything I have ever used where it has been necessary to place the devitalizing fibre, to leave it there for any particular length of time. Of course there are other modes of devitalizing. I have demonstrated this not as an exclusive mode, but as one of many ways. I have had this devitalizing fibre in a tooth for from seven to ten days. I could leave it there a month or three months without any possible danger or trouble. There is not any soreness; that is one nice feature about it. I have removed the pulp and filled immediately.

## FILLING vs. CROWN.

We should not use crowns until every possibility of filling is removed. Many bicuspids and molars that are crowned could be better preserved and more nearly approximate nature, by preparing the surface for filling. Where there is an occluding weak wall, grind it down from one-sixteenth to an eighth of an inch. Where there are no walls, insert pins in canals, allowing ends to extend up into the crown space. Take a gutta-percha cap crown, cut away the flat surface and the remaining band can be easily adjusted to the tooth, contoured with warm instruments to meet the demands. Then fill with amalgam, allowing the band to remain in situ for a day or two, when it can be removed and the amalgam polished.

There are many good molars doing excellent service, after this treatment, presenting an entire masticating surface of amalgam. Care must always be taken with amalgam to condense well and my custom is to use warm instruments in packing.—W. H. WEAVER, in *Weekly*.

## SURGICAL TREATMENT OF ABSCESS.

In opening an abscess the surface should be carefully cleansed, and other antiseptic precaution observed. All instruments should be antiseptically treated.

The first step in our operation would be cleansing of the surface with hydrogen dioxid, followed by a small injection of a five per cent. solution of eucain, an incision is then made at a point on the gum immediately overlying the apex of the affected root, with a pointed bistoury thrust down to the bone—a good-sized incision should be made. The bleeding is then encouraged by the use of hot water for a few minutes, when a pellet of cotton, which has been dipped in a solution containing one or two per cent. of cocain and antipyrin four per cent. is then laid against the periosteum at the bottom of the cut. In a few minutes bleeding will cease, when a spear-drill, driven by the engine, is passed through the bone into the tissue of the apical space.

Any bleeding which may occur is encouraged. For washing incisions and the abscess there is no agent more acceptable than a twenty per cent. solution of phenol-sodique, it being both sedative and antiseptic. A fair-sized round bur is then used to cut away necrosed bone if any is found.

If it is found necessary to excise the end of a root, a small fissure-bur is used and the root rounded, leaving no rough edges.

The wound is now cauterized with a fifty per cent. solution of zinc chlorid, and the cavity loosely filled with boracic acid gauze, your patient being seen every day, and less gauze inserted at each dressing as granulation progresses.

The time required for healing is from four to ten days, according to existing conditions. An antiseptic mouth-wash should be recommended in addition to the above treatment.—L. MEISBERGER, in *Dental Cosmos*.

## ROOTS AND BRIDGES.

With very frail roots, you will find that when they are well cleansed mechanically of the accretions which have collected on them they will be held together by bridge-work. All roots not parallel should be ground and every bit of enamel carved off at the cervical margin, so that the crown, instead of hugging the body of the tooth, will be cone-shaped, and the harder you drive it the tighter it clings. Ordinary teeth have a more offensive odor than a well adapted bridge, for there is more secretion and more foreign particles work into the interstices.—C. L. HUNGERFORD, in *Dental Digest.*

## TREATMENT OF DECALCIFIED DENTINE IN BOTTOM OF CAVITY.

Apply sufficient oil of cassia to permeate all the softened dentine. Dry the surface with chloroform ; fill with aristol and chloro percha, which becomes hard and glassy when the chloroform has evaporated. Finish with cement.—R. H. COOL, in *Pacific Gazette.*

IN TAKING an impression in plaster for a partial plate, or in taking a full impression of the teeth, use a clean impression cup evenly filled with plaster, leaving but little surplus. Wait till your plaster has set hard, then slip the cup off, it having been oiled slightly, leaving the plaster all in the mouth. Two grooves are then cut in the hardened plaster on a line parallel with the cuspid teeth, not cutting quite through. Then with a quick pry with a pointed spatula or knife the anterior piece is wrenched loose. The lateral pieces are broken off with the thumb and finger. The large piece covering the roof of the mouth may readily be worked loose. Then you have four pieces which are easily united.—G. D. SITHERWOOD, in *Illinois Society.*

## TO REMOVE PLASTER FROM VULCANITE PLATES.

Immerse plate for a few minutes in hydrochloric acid.—DR. WRIGHT, in *Pacific Gazette.*

## CORRESPONDENCE.

We have received from Dr. E. I. Wage, of Sandusky, Ohio, a very courteous letter, in which he acknowledges the pleasure and profit he has derived from the reading of the pages of the DENTAL OFFICE AND LABORATORY, and offers the following contribution :—

### REMOVING DIRT FROM THE HANDS.

"In the hope of benefiting your readers I send you my method of removing from the hands the stains resulting from contact with the vulcanizer, soot, plaster, etc., and, indeed, all the various grimes which soap and the ordinary materials used or recommended for the purpose fail to remove. The material I use is *sal soda*, the most effectual and at the same time the most inexpensive of materials. As found in the shops the material has too great an amount of alkali to be pleasant to use on the skin; it must have a part of the water of crystallization driven off, when it will be found to be harmless to the cuticle and thoroughly effective in removing all kinds of stain and dirt from the hands. To effect this, dessication must take place. Place a quantity of sal soda in a shallow dish, in a warm, dry place, and expose to the air. Dessication will soon follow, and from a coarse, lumpy mass it will soon become an impalpable powder. If now the fingers are moistened with water and applied to the surface of the dessicated soda, a small quantity will adhere. Apply with a little water to any surface to be cleansed, and the result will appear magical. Dirt will disappear, without injury to the skin, if the soda be all rinsed off."

## THE INTERNATIONAL CONGRESSES OF THE EXPOSITION OF 1900.

### International Dental Congress.

The National associations of French Dentists have organized an International Congress to be held, under the patronage of the French Government, during the Universal Exposition of 1900. Similar congresses were held during the Paris Exposition of 1889 and at the Columbian Exposition at Chicago in 1893. The principal dental societies of the entire world will be represented. The date has been fixed to the seven days from the 8th to the 14th of August, 1900, immediately following the two important Congresses—Medical Ethics (practitioners) and the Medical Congress proper.

The work of the Dental Congress will be divided into eight sections:—

1. Anatomy, Physiology and Histology.
2. Special Pathology and Bacteriology.
3. Operative Dentistry and Special Therapeutics.
4. General and Local Anæsthesia.
5. Prothesis, Dental Orthopædia and Facial Restorations.
6. Teaching and History of the Dental Art.
7. Legislation, Jurisprudence, and Professional Ethics.
8. Hygiene, Public Dental Service.

Two sorts of communications will form the matter of discussion of the Congress—first, those received in advance by the Committee, for the preparation of reports in each section; second, subjects chosen by the authors (the latter papers may be written in French, English, German, Russian, Italian or Spanish—only the conclusions must be in French). There will also be practical demonstrations, by operations, either of operative dentistry or of dental prothesis, and the exposition of new instruments.

The conditions of membership for the Congress are the legal right to practice dentistry, honorable exercise of the profession, and the recommendation of the National Committee. The Organizing Committee will also consider the applications of persons not exercising the profession. Members who desire to present communications to the Congress should give notice to the Secretary General at least three months before the opening of the Congress. With this notice they should send the text of the conclusions which sum up the paper, and these conclusions will be translated into French by the Committee.

The subscription for membership is 25 francs, giving a right to all the privileges of the Congress. Subscriptions should be sent to the Treasurer, M. Viau, 47 Boulevard Haussman, Paris. Communications are to be addressed to the Secretary General, M. le docteur Sauvez, 17 rue de Saint-Petersbourg, Paris.

## OBITUARY.

We record, with sorrow, the death of Dr. Bonwill, who died on the 24th Sept., 1899, at St. Joseph's Hospital, after a brief illness, and after an operation had been performed. Blood poisoning ensued, which resulted fatally.

His funeral took place at Dover, Del., on Wednesday, the 27th Sept. Camden, Del., near Dover, was his birthplace, at which latter town he commenced the practice of dentistry in 1854, moving subsequently to Philadelphia.

Dr. Bonwill was twice married, and left three children by his first wife, two daughters and a son. His son, Dr. Edward Bonwill, practices dentistry in Ragoon, India.

Dr. Bonwill has contributed many ideas, suggestions, modes, papers and inventions to dentistry, and has occupied a prominent place as a dental surgeon in this country and abroad. His ideas were often unique and sometimes dictatorial, accompanied with an egotism

which mitigated their value, yet withal we believe him to have been a good and earnest man at heart, and a dentist devoted to his profession.

The excellent likeness of Dr. Bonwill which accompanies this notice has been kindly loaned by L. D. Caulk, Publisher of the "Dental Brief."

## PRACTICAL PLACE.

### Painlessly Destroying Pulps Without the Use of Arsenic.

To the Editor of *Dominion Dental Journal.*

Sir :—I have been requested to write you regarding the method I employ to devitalize exposed pulps. The method is exceedingly simple and very effective. It is not original, at least as I now practise it. Formerly I used the method to do away with the pain which still remained in the small particles of the pulp which were left in the roots, the greater part of the pulp having been devitalized by arsenic. However, as a method has been lately discovered to devitalize the pulp as easily as I did the remaining particles, I resolved to try my method on the pulp, and it worked like a charm. Here it is : Dry the cavity out after having removed as much of the debris as practicable without giving a great deal of pain ; then take a piece of *soft* spunk, dip it in alcohol (absolute alcohol is the best) and then dip the alcohol-laden spunk in crystals of muriate of cocaine, place X in the bottom of the cavity and press a piece of unvulcanized rubber against it quite hard for from one to three minutes, then take out and remove the remaining lairs of decay till you thoroughly expose the pulp, and repeat the operation, when you will find the pulp has lost all sense of feeling and you can remove it without the slightest pain. Be careful to remove all the pulp before filling, as sensitiveness does not return from ten to fifteen minutes.

Yours truly,

A. J. McDonagh, L. D. S.

### To Prevent Counter Dies from Sticking Together.

Coating the face of a Melotte metal die with vaseline will prevent the counter die from fusing with the die.—*Indiana Journal.*

### Dr. Angle's Method of Removing Plaster Impressions.

Wait till your plaster has set hard ; then slip the cup off, it having been oiled slightly, leaving the plaster all in the mouth. Two grooves are then cut in the hardened plaster on a line parallel with the cuspid teeth, not cutting quite through. Then, with a quick pry with a pointed spatula or knife, the anterior piece is wrenched loose. The lateral pieces are broken off with the thumb and finger. The large piece covering the roof of the mouth may readily be worked loose. Then you have four pieces which are easily united.—G. D. Sitherwood, in *Illinois State Society.*

### A POWDER FOR DIFFICULT DENTITION.

Dr. S. Santoire, of Brooklyn, says that he has used the following formula with great success for over twenty years in hospital and private practice:

| | |
|---|---|
| James's powder. | |
| Calomel | a. a. 1 grain. |
| Sodium bicarbonate | 12 grains. |
| Dover's powder | 2 grains. |
| Sugar of milk | 12 grains. |

M.—Divide into twelve powders. To a child from six months to two years old a powder may be given every four or five hours, in syrup or in milk and water.—*New York Medical Journal.*

### CANADA BALSAM VARNISH.

A reliable varnish for tooth cavities is made by placing Canada balsam in a water bath (or in a porcelain dish at a low heat) for several hours, or long enough to make it hard and friable when cool. Pieces of this should be dissolved in chloroform to make a thin varnish.

### TO CLEAN RUSTY INSTRUMENTS.

Fill a suitable vessel with saturated solution of stannous chloride (chloride of tin) in distilled water. Immerse the rusty instruments, and let them remain over night. Rub dry with chamois after rinsing in running water, and they will be of a bright silvery whiteness.—*Digest.*

### FOR SENSITIVE DENTINE.

Ammonal, 10 grains, administered one-half hour before operating has been found, in some cases, to reduce the perception of pain.—H. H. BURCHARD, in *International Dental Journal.*

### FORMALDEHYDE IN SOLID FORM.

As you have considered formaldehyde of sufficient interest to dentists to publish a long article from one of the medical magazines, you may possibly find room for this short note on one of its dental applications. If we make a very strong aqueous solution of this gas, part of it slowly assumes the solid form and is precipitated. When this is dried and the pulp chamber in a tooth filled with it, after a time it is all reconverted into a gas and thoroughly disinfects the whole tooth. If there is an abscess at the root, by sealing in the solid formaldehyde with cement most of the gas escapes through the abscess, which soon yields to the treatment, which should be renewed every three days as long as required. An extended use has shown me the value of this treatment.—WILLIAM ROLLINS, Boston, Mass., in *International.*

## ANNEALING STEEL.

To anneal small instruments, take iron pipe, plug up one end and fill up with tools. Sift in fine charcoal dust, plug the other end, and heat slowly until good red heat throughout; then bury in wood ashes, fine charcoal or sawdust kept in an iron or tin box with close-fitting lid, and let lie until absolutely cold.—*Exchange.*

## PAINLESS DESTRUCTION OF PULPS WITHOUT THE USE OF ARSENIC.

Dry the cavity out after having removed as much of the debris as practicable without giving a great deal of pain; then take a piece of *soft* spunk, dip it in alcohol (absolute alcohol is the best) and then dip the alcohol laden spunk in crystals of muriate of cocaine, place X in the bottom of the cavity and press a piece of unvulcanized rubber against it quite hard for from one to three minutes, then take out and remove the remaining layers of decay till you thoroughly expose the pulp, and repeat the operation when you will find the pulp has lost all sense of feeling, and you can remove it without the slightest pain.

Be careful to remove all the pulp before filling, as sensitiveness does not return for from ten to fifteen minutes.—A. J. MCDONAGH, *Dom. Journal.*

## A SIMPLE TREATMENT FOR ALVEOLAR ABSCESS, WITH FISTULOUS OPENING.

I doubt if there is another subject, on which so much has been written, with so great diversity of ideas, as the treatment of abscess in dental practice. It is not my purpose to discuss the pathological conditions that exist in these cases, as this would involve a treatise on pulpless teeth, a subject that I regard as one of the most important and exhaustive, as well as the most scientific operations in dental practice.

An abscess, as commonly understood, is a sac or continuity containing pus, situated at the end of a root, with a dead pulp. In nearly all cases of abscess of long standing, necrosis occurs, and it is then that we have what we term chronic abscess, with fistulous opening. It is this phase of the subject that I desire to discuss.

In the first place we must presume that the pulp canal has been permanently filled, as this is the most important step in a permanent cure. As the fistulous opening does not always occur directly over the seat of the disease, the abscess can be located with a small probe or canal plunger. It is necessary to dissect away the gum over the diseased bone, and with a round bur cut away all affected alveola, and, if possible to reach the abscess, cut away a small portion of the apical end of the root. Wash out the cavity thoroughly with warm water so as to remove all debris. Inject peroxide hydrogen liberally, i. e., until all signs of the presence of pus have disappeared, and pack the cavity with iodoform gauze.

I find iodoform very unpleasant for most patients, and by the addition of two drops of the oil of cloves mixed with vaseline, I am able to render the iodoform nearly odorless and possibly add to the antiseptic properties of the treatment. I have treated a number of cases by the use of Marchand's glycozone instead of iodoform and can report satisfactory results,—the glycozone being entirely pleasant for the patient.

This treatment should be repeated every twenty-four hours until the pus cavity seems perfectly clean. This can be determined by the injections of peroxide hydrogen, as there will be very slight effervescence when injected into the cavity, when a final dressing can be left in the cavity and it will heal without further treatment.

I have a record of one hundred cases treated in this manner without a single failure.—DR. T. M. JAMISON, *Okolona*, *Miss.*

### FORMALDEHYDE FOR BURNS.

If compresses soaked in a 10-per cent. solution of formaldehyde are applied to the affected part, it is said that in ten minutes all the pain ceases; continued renewal of the application causes all traces of the burn to disappear, so that not the slightest redness of the skin is left. —*Mod. Med. Science.*

### FOR PERIOSTITIS.

Salicylate of sodium in doses of about fifteen grains, to be repeated every four hours if necessary, is recommended for periostitis. Fifteen drops of tincture of belladonna may be added if the pain is very violent.—*Practitioner.*

### Formalin Cement for Root-Canal Filling.

Powder—

| | |
|---|---|
| Calc. of sulphur | 200 |
| Hydrag. bichlor | 4 |

Mix finely.

Liquid—

| | |
|---|---|
| Acid sulphuric | 32 |
| Formalin | 100 |
| A. q., distillate | 100 |

Rub up a few drops of the liquid with sufficient of the powder to form a paste. Introduce into the dried root canal. It solidifies in a few moments. No discoloring or corrosive effect —Abraham, in *Zahnaerztliches Wochenblatt.*

### A Good Cement.

An excellent cement for mending almost anything may be made by mixing together litharge and glycerin to the consistency of thick cream or fresh putty. The cement is useful in mending stone jars or any coarse earthenware, stopping leaks in seams of tin pans or wash boilers, cracks and holes in iron kettles, etc. It may also be used to fasten on lamp tops, or tighten loose nuts, to secure loose bolts whose nuts are lost, to tighten loose joints of wood or iron, or in many other ways about the various kitchen utensils, the range, sink, and in the pantry fittings. In all cases the article mended should not be used till the cement has hardened, which will require from one day to a week, according to the quantity of cement used. This cement will resist the action of water, hot or cold, acids, and almost any degree of heat.—*Dental Brief.*

### Investing Shell Crowns.

In investing shell crowns for soldering, it is better to pack the interior with asbestos fiber first, as it is less liable to shrink away than the investing material, thus preventing "burnt holes" where the metal is unsupported.—B. H. Teague, in *Weekly.*

### Where Pyrozone is Effective.

A little 25 per cent. solution of pyrozone on some cotton wound on a broach and put up the canal will instantly stop the bleeding from extirpated pulp so you could proceed to dry the canal and fill it at once. When trying to fit a crown to the root of a tooth, and the gums are bleeding and oozing so that you cannot get it dry enough to attach the crown, apply 25 per cent. pyrozone on a lock of cotton.—L. West, in *Items.*

### ANTIDOTE FOR ARSENIC EROSION.

A. N. Dick, in the *Pacific Medico-Dental Gazette*, May, 1898, page 218, recommends tincture of iodine as a very reliable antidote for the erosive action produced in the soft tissues by arsenic trioxide. It has proved to be so certain and prompt in arresting the inflammation and ulceration caused by the accidental contact with the gums or cheeks that he regards it as a specific.

### DO NOT USE A STEEL SPATULA FOR MIXING CEMENT.

A plain steel spatula should never be used for mixing oxyphosphates, for if the acid of the liquid portion has been properly neutralized, or toned down with phosphates, it is damaged by its action on the steel of the instrument, forming phosphate of iron, which necessarily changes the texture of the cement mass, and often changes the color to an objectionable extent.—W. B. AMES, *Items*.

### FILLING FOR DECIDUOUS TEETH.

Dr. Gilbert suggested the following a few years since, and it is well worth a trial. In filling deciduous teeth, he says, it is often impossible to exclude the moisture from the cavity sufficiently to prevent filling with zinc phosphate, unless the dam is used, which is not always easy by any means. The difficulty of filling may be overcome in the following manner: Place some cement powder upon a slab, also a little of the fluid, and besides these a little chloro-stopping (which is made by dissolving Dr. Gilbert's stopping in chloroform). Make a thin mix of the cement, then add to it the chloro-stopping, mixing in more of the powder until a thick putty-like consistency is obtained; now napkin mouth and dry as well as possible, immediately packing to place and finishing with burnishers.—*Amer. Dental Weekly*.

### MERCURY; TO PURIFY.

Dr. Beacock says hydrochloric acid has no effect on mercury; sulphuric acid must be heated to affect it much; nitric acid acts on it lightly. By taking advantage of this, mercury can be purified easily from lead and many other base metals or impurities with which it is often mixed. Using one part acid to eight parts water, heated to 140 F., will not attack the mercury, and is sufficiently strong to eat up the baser metals the mercury may contain. Another way to purify mercury is to shake it well in pulverized sugar, then filter through a paper cone by making pin holes in the bottom of it. The mercury will filter through, leaving the sugar in the paper.

### CROWN-SETTING WITH GUTTA-PERCHA.

In an article on gutta-percha, Mr. Rushton, in *Brit. Jour. Dental Science,* says:

"For cementing all-gold crowns, I have found a useful plan is to place some impression gutta-percha in the crown with a few drops of eucalyptus oil, heat and stir gently until some of the oil is driven off and a sticky, viscid mass is left. The crown is then pressed into place. Objection has been taken to the use of gutta-percha for this purpose, as the odor of the crown when removed is very unpleasant, but of this I have had no experience. I can only say that I have found that any stopping, after being in the mouth a long time, evolves an unpleasant odor when heated."

He also gives this as an excellent formula for a gutta percha filling

| | |
|---|---|
| Pure gutta | 50 parts |
| Finely levigated silica | 30 " |
| Oxide of zinc | 20 " |

### TO PREVENT PLASTER IMPRESSION FROM STICKING TO TEETH.

"Dr. L. C. Ingersoll advises adding to plaster of Paris from one-third to one-half of pulverized pumice, according to the strength of the plaster. By this means he claims that adhesion to the teeth is almost entirely prevented, and that there is less liability to fracture of the impression on its removal from the mouth."

### USES OF BORAX.

Borax is used for many household purposes, but its medicinal properties are not as fully known as they deserve to be. If you are not sure that the water you drink is pure, dissolve a teaspoonful of borax in a bucketful; it will destroy disease germs, is perfectly harmless, and will not give it a disagreeable taste. A level teaspoonful of borax dissolved in a cup of water makes an excellent wash for a baby's sore mouth, or it may be used to bathe wounds, the bites or stings of insects, or any kind of inflammation, cooling and healing them. It is also an excellent disinfectant, and should be used freely about the house after its occupants have had any contagious disease.

### IMPORTANCE OF THE ATMOSPHERE.

If the earth were not enveloped with atmosphere, the temperature on the surface would be about 330 degrees Fahrenheit below zero.

# GENERAL INDEX FOR VOL. XIII, 1899.

A

PAGE.

Alveolar Abscess. Diffusion of Remedies in . . . 29
Antikamnia . . . 44
A Warning. Cataphoresis . . . 45
Ankylosis of the Human Teeth to the Jaws . . . 57
A Vulcanite Finish . . . 58
A Cheap Method of Crowning . . . 59
Annealing Gold . . . 58, 60
Add Potassium Sulphate to Investing Plaster . . . 61
A New Counter-die. A Counter-die . . . 62
A Common Occurrence . . . 63
Amalgam. Some Points Known About . . . 65
A Hint on Extracting . . . 85
Aluminum. To Polish and Restore . . . 87
Amalgam. Bismuth in . . . 91
Arsenic in Pulp Devitalization . . . 94
Annual meeting of the National Dental Association . . . 116
Arrest of Dental Hemorrhage . . . 123
A Substitute for Gold . . . 125
Antidote to Strychnine. Lard an . . . 125
Amalgam and Cement. How to Manipulate . . . 128
A Rubber Substitute from Corn . . . 128
Action of Arsenic On soft Tissues. Antidote 157
Amalgam. Sulphuric Acid in Mixing . . . 157
A Process for Nickel Plating . . . 159
Acid Tanning . . . 172
A Mode of Devitalizing Teeth . . . 177
Angle's (Dr.) Method of Removing Plaster Impressions . . . 184
A Powder for Difficult Dentition . . . 185
Annealing Steel . . . 186
A Simple Treatment of Alveolar Abscess With Fistulous Opening . . . 186
A Good Cement . . . 188
Antidote for Arsenic Erosion . . . 189

B

Book Notices . . . 21, 55, 56, 156, 170, 177
Bridge Work. Construction of Crown and . . . 33, 97
Bryant's Bridge Repairing Set . . . 85
Broken Column of Mercury in Vulc. Thermometer . . . 86
Bismuth in Dental Alloy . . . 91
Bi-carb. Soda to Remove Iodine Stains . . . 94
Buccal Cavities. Gum Tissue in . . . 126
Borax Solution for Soldering . . . 160
Burns. Formaldehyde for . . . 187
Borax. Uses for . . . 190

C

Crude Silver Salts . . . 20
Construction of Crown and Bridge Work . . . 33, 97
Cataphoresis, A Warning . . . 45
Cataphoresis vs. Jamaica Dogwood . . . 57
Cutting to Obtain Strong Margins . . . 59
Clyde Payne's (Dr.) Obtundent . . . 61
Corns . . . 63
Carbolic Acid. A New Use for . . . 64
Creolin, Some Uses of . . . 82
Carborundum vs. Arkansas Stone . . . 86
Carbuncle. Relief for . . . 88
Creosote and Sunlight . . . 95
Chloroform. Danger Signals in . . . 122
Cleansing the Hands with Pearline . . . 122
Cleansing the Hands . . . 180, 125
Cracking Porcelain Facings. To Lessen the Danger of . . . 125
Cleaning Teeth . . . 126
Corn as a Substitute for Rubber . . . 128
Colorado State Dental Society . . . 156
Cementing Bands to Crowns . . . 158
Combination Filling. Oxyphosphate and Gutta Percha . . . 158
Carborundum. To Mount . . . 159
Crowns vs. Bridges . . . 178
Correspondence . . . 180
Canada Balsam Varnish . . . 185
Crown Setting With Gutta Percha . . . 190

D

Diffusion of Remedies in Alveolar Abscess 29
Decay. To Prevent Recurrence of . . . 31
Dental Amalgam, Physical Properties of . . . 50
Death to Corns . . . 63
Dental Alloy. Bismuth in . . . 91
Disinfection. A New Method of . . . 91
Does Plaster Shrink in Vulcanizing? . . . 96
Deodorized Tincture of Opium for Periodentitis . . . 122

D

PAGE.

Danger Signals in Chloroform . . . 122
Dental Hemorrhage. To Arrest . . . 123
Diagnosis of Pulp Nodules . . . 124
Dentists for the Army and Navy . . . 141
Deciduous Teeth. Pulp Devitalization in 157
Deciduous Teeth. Root Canal Filling for 157
Decalcified Dentine in Bottom of Cavities. Treatment of . . . 180
Difficult Dentition. A Powder for . . . 185
Do Not Use Steel Spatula for Mixing Cement . . . 189
Deciduous Teeth. Filling . . . 189

E

Evacuating an Abscess . . . 32
Emergency Calls. List of Instruments . . . 50
Eucaine "B" as a Local Anæsthetic . . . 61
Eugenol and Oxide of Zinc as a Filling . . . 62
Easy Way of Removing Foreign Bodies from the Nasal Cavities of Children . . . 62
Enamel Fillings . . . 73
Easy Way of Refining Gold . . . 104
European Dentistry . . . 111
Extraction of the First Permanent Molars a Beneficent and Conservative Operation 117
Extracting Superior Cuspids . . . 127

F

Fusible Alloy (Caution) . . . 13
Formagen. Mixing and Application of . 31
Filling Materials. Plastic . . . 83
For Opening Root Canals . . . 87
Formalin . . . 88
First Learn, then Form an Opinion . . . 93
Formaldehyde . . . 95
Fluids of the Mouth and Sensitive Teeth . 96
For Putrescent Pulp Treatment . . . 102
Fever Blisters . . . 126
Fillings vs. Crowns . . . 178
For Sensitive Dentine . . . 185
Formaldehyde in Solid Form . . . 185
Formaldehyde for Burns . . . 187
For Periostites . . . 187
Formalin Cement for Root Fillings . . . 188
Filling Deciduous Teeth . . . 189
Formaldehyde . . . 124

G

Gingival Cavities . . . 49
Guaiacol as a Local Anæsthetic . . . 81
Gold Crowns. To Remove . . . 86
Gum Tissue in Buccal Cavities . . . 126
Glycerine as a Medicine . . . 127
Gutta Percha for Setting Crowns . . . 190

H

How to Evacuate an Abscess . . . 32
How to Set Crowns and Bridges That They May be Removed . . . 59
How to Remove a Pin Cemented in a Root 89
How to Make a Clean Model . . . 95
How to Manipulate Amalgam and Cement 128
Hart's (Dr.) Idea of the Evolution of Caries and Their Prevention . . . 175

I

Impressions . . . 27
Impressions. Separating from Model . . . 31
Immediate Suction of Dentures . . . 32
Investment for Soldering . . . 44
Inlays. Porcelain . . . 46
Investments . . . 61
Impression Material from which a Die May be Cast Straight . . . 61
Iodine Stains. To Remove . . . 94
Iodo-formagen Cement . . . 105
Iodo-formagen in Practical Cases . . . 106
Inlay Matrix. To Remove . . . 123
International Congresses of the Exposition of 1900 . . . 181
Investing Shell Crowns . . . 188
Importance of the Atmosphere . . . 190

J

Jamaica Dogwood vs. Cataphoresis . . . 57
Japanese Tooth Picks . . . 94

L

Leading Questions and Answers . . 15, 39, 166
Lining Cavities with Varnish . . . 32
Liberal Cutting Essential . . . 59
Local Anæsthesia with Eucaine "B" . . . 61
Local Anæsthesia. Guaiacol as a . . . 81
Leaving Softened Dentine Before Filling 109

# GENERAL INDEX FOR VOL. XIII.

L

PAGE.

Local Anæsthesia for Extracting Teeth . . 124
Lard as an Antidote for Strychnine . . . . 125
Loose Teeth. Splint for . . . . . . . . . 177

M

Mixing and Application of Formagen . . 31
Making Seamless Crowns . . . . . . . . 76
Method of Removing Pulps . . . . . . . 87
Making Dental Alloys—Order in Which the Metals Should be Melted . . . . . . 90
Mounting Carborundum . . . . . . . . . 159
Mercury. To Purify . . . . . . . . . . 189

N

National Association of Dental Faculties . 129
New Use for Carbolic Acid . . . . . . . . 64
Nitrate of Silver in Alcohol . . . . . . . . 64
Nitrate of Silver Stains. To Remove . . . 86
New Method of Disinfection . . . . . . . 91
Neutralizing Sulphuric Acid. . . . . . . . 123
Nickel Plating. A Process for . . . . . . . 159

O

Obituary Notices . . . . . . . . . . . 23, 182
Obtundent. Dr. Clyde Payne's . . . 61
Oxide of Zinc and Eugenol as a Filling . 62
Opportunities for Success . . . . . . . . . 108
Oxychloride of Zinc . . . . . . . . . 110
Oxyphosphate and Gutta Percha Combination Filling . . . . . . . . . . . . . 158

P

Packing Pink Rubber . . . . . . . . . . . 45
Porcelain Inlays . . . . . . . . . . . . . 46
Physical Properties of Dental Amalgam . 50
Plaster. To Remove from the Hands . . 62
Plain Teeth with Pink Rubber Gums. . . 70
Painless Dentistry . . . . . . . . . . . 71
Pain After Extraction . . . . . . . . . 84, 93
Plaster Casts. To Secure Perfect . . . . 85
Painful Dentition in Infants . . . . . . . 86
Pulps Method of Removing . . . . . . 87
Polishing Plates . . . . . . . . . . . . . 92
Poisonous Flowers, Plants and Berries . . 93
Pulp Devitalization. Arsenic . . . . 94
Peroxide of Hydrogen for Cuts and Burns . . . . . . . . . . . . . . . . . . . 94
Pulp Mummification . . . . . . . . . . . 102
Putrescent Pulp Treatment . . . . . . . . 102
Pericdentitis. Deodorized Tincture of Opium for . . . . . . . . . . . . . . . 122
Pearline for the Laboratory . . . . . . . . 122
Porcelain Inlays. Setting . . . . . . . . . 122
Plaster Models . . . . . . . . . . . . . . 123
Pulp Devitalization in Posterior Teeth . . 124
Pulp Nodules—Diagnosis . . . . . . . . 124
Peroxide of Hydrogen for Local Anæsthesia . . . . . . . . . . . . . . . . . 124
Pyrozone. Where it is Effective . 188, 127
Pain After Extraction. To Allay . . . . . 128
Pulp Devitalization in Deciduous Teeth . . 157
Pericementitis . . . . . . . . . . . . . . 157
Plaster. To Soften Hard . . . . . . . . . 159
Painlessly Destroying Pulps Without the Use of Arsenic . . . . . . . . . . . 184, 186
Periostitis . . . . . . . . . . . . . . . . 187
Plastic Filling Materials . . . . . . . . . 83

Q

Questions and Answers. Leading . 15, 39, 166

R

Report of Foreign Relations Committee of the National Association of Dental Faculties . . . . . . . . . . . . . . . 1
Removal of Broken Broaches from Root Canals . . . . . . . . . . . . . . . . 60
Removal of Foreign Bodies from the Nasal Cavities of Children . . . . . . . . . . 62
Report of the Pennsylvania Association of Dental Surgeons . . . . . . . . . . . 73
Removing Teeth from old Rubber Plates . 85
Root Canals. To Open . . . . . . . . . . 87
Relief After Extraction . . . . . . . . . . 87
Retaining Appliances . . . . . . . . . . . 87
Relief for Carbuncle . . . . . . . . . . . 88
Root Canal Treatment . . . . . . . . . . 90
Refining Gold Scraps . . . . . . . . . 90, 92
Rubber Rings and their Uses . . . . . . . 95
Refining Gold. Easy Method of . . . . . 104
Root Canal Filling . . . . . . . . . . . 123
Removal of Inlay Matrix . . . . . . . . . 123
Removing Plaster Impression from Cup. . 125
Root Canals. Nitrate of Silver in . . . . 127
Root Canal Filling for Deciduous Teeth . . 157

R

PAGE.

Removing Deposits and Stains . . . . . . 158
Removing Teeth from Dentures . . . . . 160
Rules for Crown and Bridge Work . . . . 161
Roots and Bridges . . . . . . . . . . . . . 179
Rusty Instruments. To Clean . . . . . . 185
Root Canal Filling. Formalin Cement for 188

S

Silver Salts. Crude . . . . . . . . . . . . 20
Science Opposed to Avarice . . . . . . . . 24
Separating Impression and Model. . . . . 31
Securing Immediate Suction of Dentures . 32
Soldering. Investment for . . . . . . . . 44
Some Points Known About Amalgam. . . 65
Some Uses of Creolin . . . . . . . . . . . 82
Sensitive Dentine . . . . . . . . . . . . 96, 88
Sensitive Teeth . . . . . . . . . . . . . . 96
Setting Porcelain Inlays . . . . . . . . . 122
Sulphuric Acid. To Neutralize . . . . . . 123
Setting Crowns with Gutta Percha . . . . 125
Silver Nitrate in Root Canals . . . . . . . 127
Sulphuric Acid in Mixing Amalgam . . . 157
Stains. Removing Deposits and . . . . . 158
Solution for Soldering. Borax . . . . . . 160
Sloughing Gums Due to Formaldehyde. Treatment of. . . . . . . . . . . . . . 160
Splint for Loose Teeth. . . . . . . . . . . 177
Surgical Treatment of Abscess . . . . . . 179
Steel. To Anneal . . . . . . . . . . . . . 186
Steel Spatula for Mixing Cement. Do Not Use. . . . . . . . . . . . . . . . . . . 189

T

To Prevent Recurrence of Decay . . . . . 31
To Prevent Plaster Sticking in Impressions . . . . . . . . . . . . . . . . . . . 44
The Sin of Worrying . . . . . . . . . . . 57
To Remove Readily Crowns and Bridges . 59
The Value of Plus Contours . . . . . . . . 59
To Remove Plaster from the Hands. . . . 62
The Pulp Canal Question . . . . . . . . . 77
The Rubber Dam. . . . . . . . . . . . . . 85
To Secure a Perfect Plaster Cast. . . . . . 85
To Remove Gold Crowns . . . . . . . . . 86
The Oak and the Squash. . . . . . . . . . 86
To Remove Nitrate of Silver Stains . . . . 86
To Polish and Restore Aluminum . . . . . 87
To Make a Warped Rubber Plate Fit . . . 88
To Drive a Needle Through a Copper Coin . . . . . . . . . . . . . . . . . . . 89
To Allay Pain After Teeth Extraction . 128, 93
Treating Sensitive Dentine . . . . . . . . 96
To Clean a Mixing Slab . . . . . . . . . . 96
The Dental Department of the University of Buffalo. . . . . . . . . . . . . . . 103
The Non-removal of Softened Dentine before Filling. . . . . . . . . . . . . . . 109
The First Permanent Molars. Extraction of—A Beneficent Operation . . . . . . . 117
The Omission of a Comma . . . . . . . . 122
To Remove Plaster from Vulcanite . .180, 124
To Lessen the Danger of Cracking Porcelain Facings . . . . . . . . . . . . . . 125
To Prevent Separating Rubber from Injuring the Gums . . . . . . . . . . . . . 125
To Remove Plaster Impression from Cup . . . . . . . . . . . . . . . . . . . 126
The 29th Annual Meeting of the New Jersey State Dental Society . . . . . . 143
Treating Slight Wounds. . . . . . . . . . 159
To Soften Hard Plaster . . . . . . . . . . 159
Treating of Sloughing Gums Due to Formaldehyde. . . . . . . . . . . . . . . . 160
Treatment of Decalcified Dentine in Bottom of Cavities . . . . . . . . . . . . 180
To Prevent Counter-dies from Sticking Together . . . . . . . . . . . . . . . . 184
To Clean Rusty Instruments . . . . . . . 185
To Purify Mercury. . . . . . . . . . . . . 189
To Prevent Plaster Impression from Sticking to the Teeth . . . . . . . . . . . . 190

U

Uses of Borax . . . . . . . . . . . . . . 190

V

Vulcanizing Rubber . . . . . . . . . . . 57
Vertical Pin Teeth the Stronger. . . . . . 58
Varnish for Cavities . . . . . . . . . . . 60
Virginia State Dental Society . . . . . . . 155
Varnish. Canada Balsam . . . . . . . . . 185

W

What Instruments Shall I Carry? . . . . . 53
Warts. . . . . . . . . . . . . . . . . . 123, 95
Where Pyrozone is Effective . . . . . 188, 127
Wounds. Treating Slight. . . . . . . . . . 159